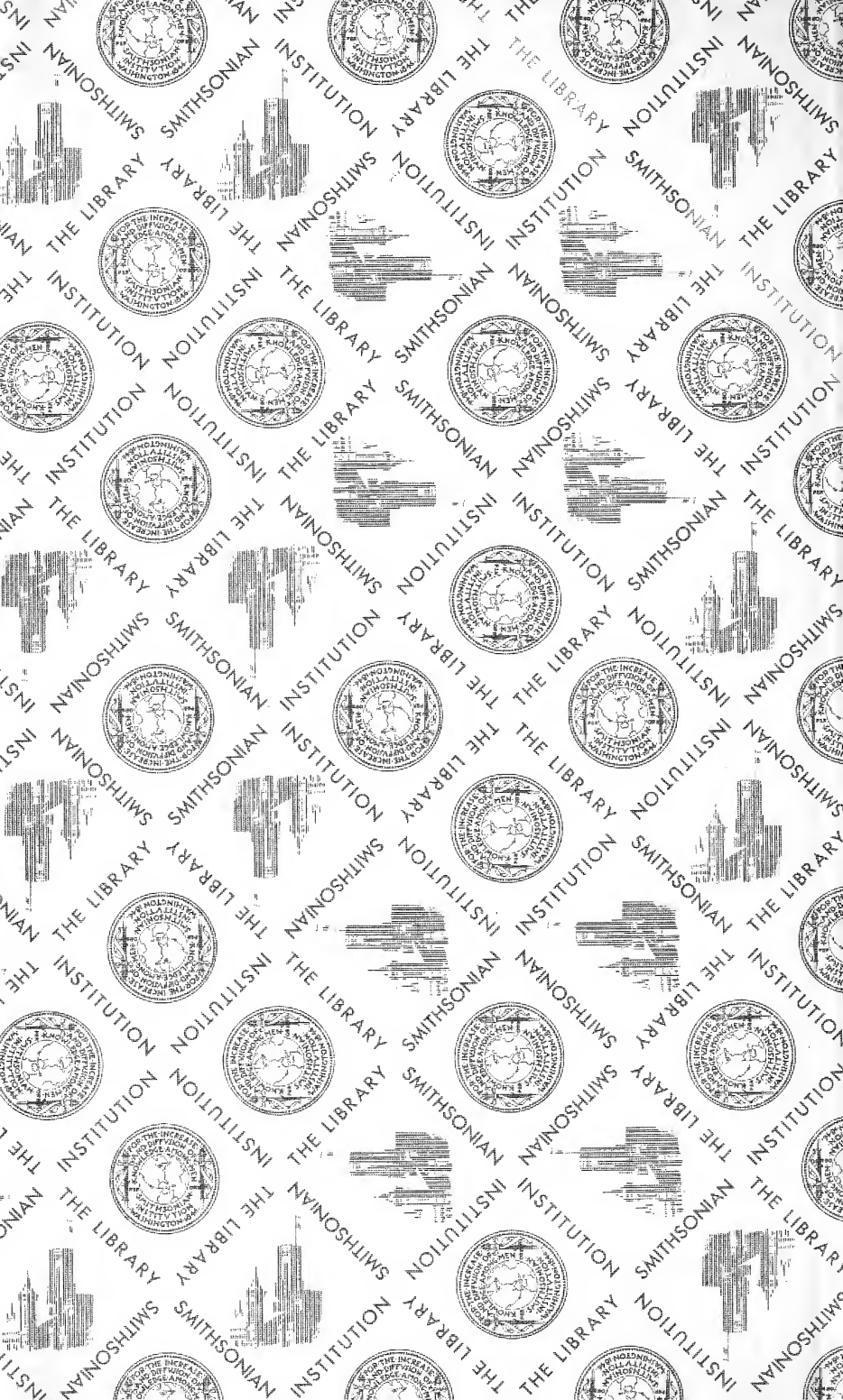
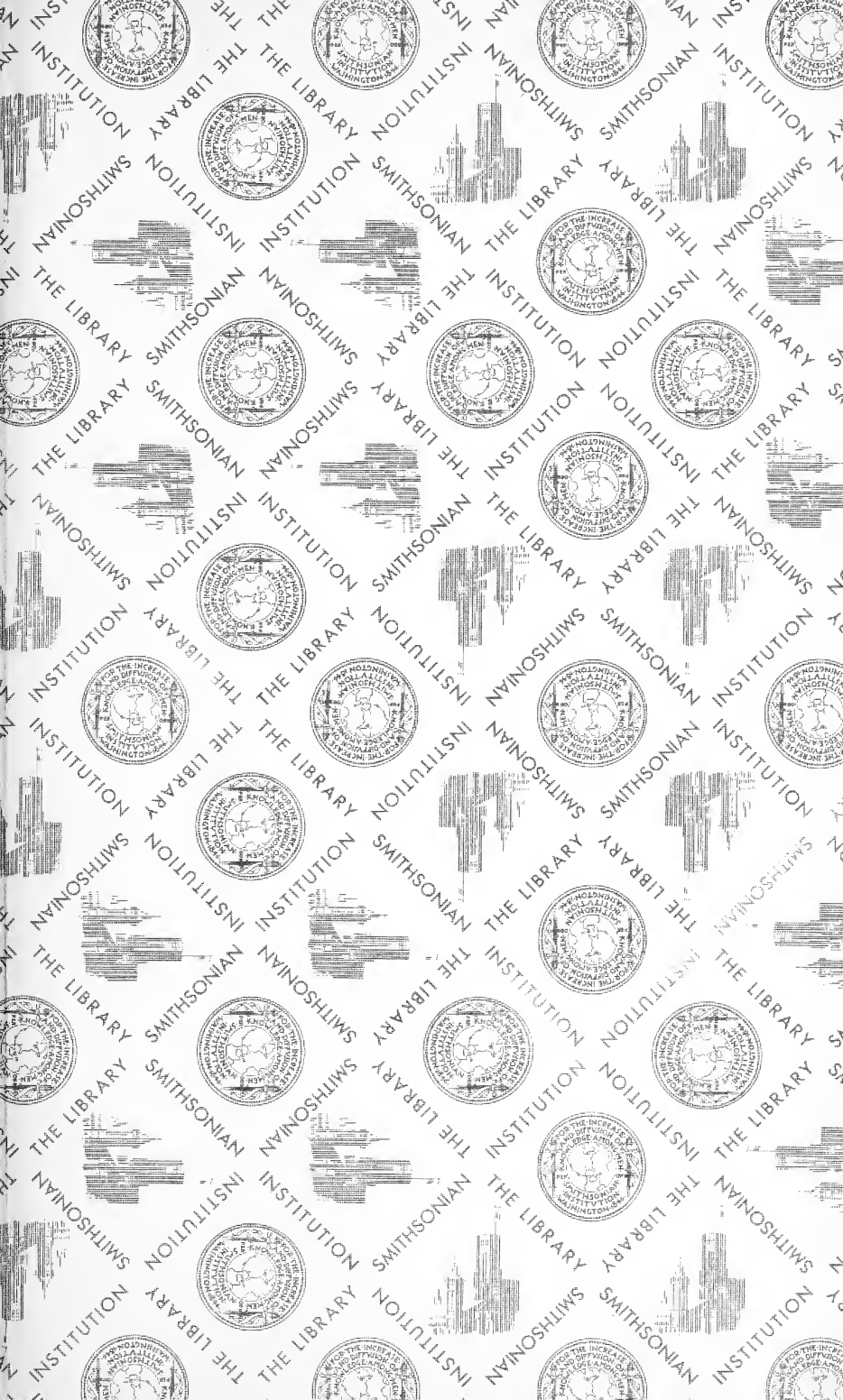


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THE BUTTERFLIES AND MOTHS OF KENT

BY
J. M. CHALMERS-HUNT, F.R.E.S.

VOLUME 1
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P R E F A C E

IN submitting this volume to the consideration of entomologists and others interested in Natural History, it may be said that no pains have been spared in the endeavour to produce an adequately detailed record, and accurate account, of the distribution and nature of the Butterflies of the county. Such a task has not been simple. One difficulty arises from the popular interest in this branch of the Lepidoptera, which has resulted in a vast number of notes and observations, all of which had to be sorted out and collated with what has already appeared in print; and with such a mass of material, it was far from easy to decide what to omit and what to retain.

The total number of species pertaining to Kent is 77, of which 60 are accepted without reserve. Of these 60, 39 are natives or suspected natives, 12 are immigrants or suspected immigrants, 5 are residents or residents reinforced by immigration, and 4 are species that have become extinct. Of the remaining 17 species, the records of 12 are included within the reservation of square brackets as being somewhat doubtful, and those of 5 have been treated as inadmissible. It should be understood, however, that it is not always possible to apply a strict rule to deciding the degree of reserve to be imposed, so that the question of admission or rejection of a record may at times be a matter of opinion.

In spite of the mass of recorded observation available, information on certain aspects of the subject was found to be extremely meagre. For example, there is a very marked lack of information as to what are the foodplants in nature of a number of quite common species. There is also a dearth of information on the relative numerical frequency of nearly all forms of variation, though the number of records of individual aberrations themselves is very large.

In conclusion, it is sincerely hoped that in spite of its failings, the present work may be found to be of some value as a basis for future investigation, and an encouragement to those who undertake it.

J. M. CHALMERS-HUNT.

West Wickham,
22nd October 1961.

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The Butterflies and Moths of Kent: A Critical Account

By J. M. CHALMERS-HUNT

INTRODUCTION

There is probably no county which is richer in Lepidoptera than Kent. This is due to its geographical and physical features: numerous and extensive woods and marshes, varied geological formations, vast extent of coastline, and proximity to the Continent.

Because of its attractiveness and reasonable accessibility, Kent has always been one of the best worked counties for Lepidoptera. The countless observations that have accordingly resulted from the generations of men over the past 250 years thus provides a most valuable historical background.

The above facts, together with the knowledge that no comprehensive and up-to-date work existed on the Lepidoptera of Kent, prompted me to undertake the present account; a labour of love that has occupied most of my spare time since 1947.

MAIN OBJECTS OF THE WORK

These are (1) to provide an adequately detailed record; (2) to indicate the distribution and status of the lepidopterous fauna of the county; (3) to stimulate interest by providing a basis for future investigation, and to suggest what should yet be looked for, by presenting in readily accessible form what is already known.

TOPOGRAPHY

Kent occupies about 1570 square miles and at its nearest point is situated only about 24 miles from France.

The main feature of the county is the central mass of chalk known as the North Downs, which stretches from a little north of Westerham to the cliffs of Dover. This extent is broken in three places by the valleys of the rivers Darent, Medway and Stour, and the whole forms a natural barrier through the county, dividing it into two rather unequal portions. On the one side it slopes to seaward and the estuaries of the Thames and Medway, and on the other it dips into the Weald with its extensive woodland tracts that once formed part of the great Forest of Anderida.

DELIMITATION OF DIVISIONS

The county is here portioned into seventeen divisions (see map), based primarily on ecological features. Briefly these divisions are outlined as follows:

1. Eocene soils of N.W. (suburban) Kent, north of the chalk and west of the Darent.
2. Alluvial marshes of the Medway and Thames estuaries from Woolwich to Seasalter and up the Medway to Allington lock, including Sheppey. Above Hythe, only river banks are included.
3. The Eocene area (wooded) of N.E. Kent, i.e., the Blean—N. and E. of Canterbury as far as Stour and also Bysing Wood near Faversham.
4. Stour marshes from Fordwich weir to the sea at Reculver—Minnis Bay and Deal—Pegwell.

5. Chalk of Darent.
 6. Darent—Medway chalk.
 - 6a. Areas of divisions 2 and 6 covered with tertiary deposits.
 7. Medway—Stour chalk.
 8. Stour—Channel coast chalk.
 9. Thanet.
 10. Darent basin, except chalk—mostly gault and greensand.
 11. Wealden Medway basin (non-tidal) as far S. as the N. edge of Hastings sands.
 12. Stour basin above Fordwich to Weald (no chalk).
 13. Hastings beds of Medway.
 14. Hastings beds of Rother.
 15. Romney Marsh.
 16. Channel terrace, Bilsington to Warren.
- I wish here to express my indebtedness to Dr. Francis Rose for this system of delimitation.

PREVIOUS WORK

The only published account dealing with the Lepidoptera of Kent as a whole is the section on this order in the Victoria County History, published in 1908. This is mainly based on records from a limited number of places only, and except for the portion on the butterflies, which is moderately adequate, the records for many of the moths are insufficient to give a fair survey of what was known of their distribution at the time.

Local lists are rather numerous and vary considerably in quality as well as in character. They range in size from a few selected species included in a local guide-book, to a detailed district list.

BIBLIOGRAPHY, MSS., DIARIES, COLLECTIONS

All literature relevant to Kentish Lepidoptera has been consulted and the necessary items incorporated. A list of bibliographical references, pamphlets, local lists, manuscripts and diaries, as well as collections cited is included at the end of this work.

NOMENCLATURE AND CLASSIFICATION

These follow those of Heslop, *Revised Indexed Check-list of the British Lepidoptera* (*Ent. Gaz.*, 1959: **10** (4), and further instalments to be published). Some synonyms not included there are added for convenience. The English names adopted mostly accord with this list.

It is fitting that I should here acknowledge assistance kindly rendered by Mr. W. H. T. Tams of the British Museum (Natural History), particularly regarding sequence of arrangement and nomenclature of alien species not included by Heslop.

VARIATION

The main sources of information have been Tutt, *British Noctuae and their Varieties*, including Turner's Supplement; Seitz, *Macrolepidoptera of the World*; and the Rothschild-Cockayne-Kettlewell Collection.

NOTE ON MELANISM

Progressive melanism has manifested itself in many moths during the past hundred years, and its progress has increased very considerably during the present century.

Generally speaking, the spread of melanism appears to have moved in an easterly direction in Kent, that is to say, outwards from the Metropolitan area. Thus numerous illustrations of melanistic incipience as well as many extreme examples of melanism are to be found in the north-west of the county.

Two striking instances of melanism of purely local character are shown by *Hydrelia testacea* Don. and *Ectopis consonaria* Hübn., both of which produce very dark forms in mid-Kent, but exhibit no evidence of this elsewhere.

Beside such cases of melanism due to the effects of infection from the Metropolitan area and those of purely local character, there are indications, particularly noticeable in east Kent, that the presence of melanism in some species may also be due to immigration. The melanic forms of *Tethea ocularis* Linn. and *Hadena suasa* Schiff., for example, are suspected of having recently originated from the Continent.

ASSESSMENT OF RELATIVE FREQUENCY

Since this is a compilation from the writings and records of many observers, it must be stated that remarks on relative frequency may not satisfactorily represent the facts. Hence, terms assigned for this purpose, e.g., common, abundant, rare, can in many cases have only a limited value.

RECORDS

So as to assist the reader in following the plan of the present work, it may be well to specify the methods employed in the treatment of records and arrangement of localities.

In general, all records are set out according to the system of ecological divisions outlined above. For the purpose of clearly indicating the earliest recorded occurrence of a species in any particular division, I have, as a rule, placed such a record first, but apart from this, localities are not usually arranged in any special sequence within their respective divisions.

When there are more than one record for a particular locality, they usually follow one another chronologically, in order to indicate continuance of a species there. It has been my practice sometimes to include one or more references to a record beside the original one, but only if these have additional information of sufficient interest. On the other hand, some records here contain some information not to be found at the references given.

Records of extinct, and of some immigrant species, as well as a number of others (e.g., *Pararge aegeria* Linn.), are listed chronologically throughout.

So far as is known, all records refer to feral imagines unless otherwise stated.

Some species are abundant in certain parts, but rare in others, so that it is necessary to enumerate the localities in some, but not in all divisions. Unfortunately, the fact that certain divisions have been well worked, whereas others are comparatively neglected, has had the effect in some cases of giving a false idea of distribution. In the case of a generally distributed and common species, a list of all localities in which it has been noted is not given, since this would in some instances,

virtually amount to a gazetteer of the county, but the divisions from which it has been recorded are stated.

NOTES ON SOME LOCALITIES

The boundary of the Metropolis is retained, thus, localities now within the administrative County of London, but which were formerly in Kent, are included in the present account.

Many writers name the same locality in different terms; for instance, one writer may denote a locality by a different name from that used by someone else for the same locality. It is not practicable to give a complete descriptive list of these, but some of the more noteworthy are included among the following (grid references in brackets are those of the National Grid Ordnance Survey, scale 1" to the mile [New Popular Edition]).

Birch Wood (Q502688).—Formerly a locality of some extent, but of which only a small part now remains. Much worked during the first half of the 19th century, but hardly noticed since 1860. Was famous for the annual festivals of the Entomological Club, held at the Bull Inn, Birch Wood Corner; also for many interesting species, including the unique *Talaepora douglasi* Staint.

This locality is not to be confused with Birch Wood (Q385642) for which there are comparatively few records, and to distinguish it from the above is hereafter referred to as "Birch Wood near West Wickham".

Blean or Blean Woods may refer to any part of the contiguous stretch of woodland extending from Dunkirk in the west to Hoath in the east.

Chevening: Lort-Phillips *alias* Frederick Gillett, recorded his home captures under "Shootfield", the name of his house at Chevening, under which place-name, they are referred to hereafter.

"*Dartford*".—In Victoria County History, frequently refers to Dartnith Wood, sometimes to Dartford Heath, occasionally to Dartford Marshes.

Dungeness: Consists of the largest shingle beach in Europe and extends almost to Lydd. The nuclear power station is now in process of erection on the ground situated west of the old railway track (now pulled up) to the lighthouse. The area east of this is probably the most important, entomologically, and contains some marshy ground and the "long pond". Among species of special interest may be mentioned *Lasiocampa trifolii* Schiff. (a remarkable pale form), *Dasychira fascelina* Linn., *Eilema pallifrons* Zell., *Hadena albimacula* Bork., *Thalera fimbrialis* Scop., *Coleophora otitae* Zell.

Deal Sandhills.—The biggest sand dune system in S.E. England, now restricted to a narrow belt, about 6 miles long, of maritime sand dune, its vegetation flattened in places by hoards of trippers. Formerly the area extended some distance inland, until much of it was converted into golf courses, or, to use Tutt's expression, "a playground". Paradoxically, though, this has probably had the effect of partly conserving it, since some of the most productive areas consist of golf course "rough". During the last half century, people have mostly worked the northern end, i.e., Sandwich Bay, and thus records for this period refer to the locality as "Sandwich". The whole area is one of the richest for local species, and the following are only a few of the most notable: *Eilema*

pallifrons Zell. f. *pygmaeola* Doubl., *Aplasta ononaria* Fuessl., *Sterrha ochrata* Scop., *Oxyptilus distans* Zell., *Lithocolletis quinqueguttella* Stt., *Nemotois cupriacella* Hübn.

Ham Fen (Q336548).—An uncultivated valley fen on chalk with mixed carr. "Ham ponds" and "Ham marshes"—the latter not to be confused with Ham Marshes, Faversham (Div. 2)—are synonymous. This is the only recorded locality in Kent for *Anticollix sparsata* Treits., also for the extinct *Sterrha muricata* Hufn. The topography and vegetation of Ham Fen is adequately described by Rose in *Journal of Ecology*, 1950, 38: 292-302.

Ham Street or *Ham Street Woods*.—It may safely be assumed that the vast majority of records so designated refer to Orlestone Woods, situated N.W. of the village of Ham Street. These consist of Long Rope, Birchett, Burnt Oak, and Faggs, and constitute what is generally considered the finest locality for woodland lepidoptera in Britain.

The area is damp mixed woodland on weald clay, and contains extensive stands of oak, birch, aspen, hornbeam and sallow. There is a thriving ground flora including an abundance of *Solidago virgaurea* (golden rod) in the open parts, and in the western portion of Burnt Oak is about a quarter acre of well grown heather. Grassy rides traverse the woods; there are extensive clearings, and wide, flowery roadside verges. In these situations many of the best species have been encountered.

Two of the most interesting moths that occur here feed on aspen; they are *Colobochyla salicalis* Schiff., a slate grey insect with three reddish brown transverse lines, now known from nowhere else in Britain, and the magnificent *Catocala fraxini* Linn., perhaps better known to many as the Clifden nonpareil. The history of the aspen here seems to support the view that both these species are old-established residents. Sir Roland Oliver tells me that these woods were acquired by his family about 1850, and that since he was a child (he was born in 1882) the aspens have been here. He considers that they are probably indigenous, like the oak, birch and hornbeam, and adds that the old natives called the aspen "epse", or "hepse" as they pronounce it.

Since the last war, these beautiful woods—like so many others have been systematically planted with conifers, in consequence of which it may not be long now before their whole character is altered, and they become ruined entomologically.

Kings Wood (Q035505), in division 7, should not be confused with *Kings Wood* (Q830510) in division 11.

"*Royal Oak*".—J. J. Walker refers to numerous species from here in his Ms. notebook. I have been unable to identify this place but possibly it is in north Sheppey.

Reinden Wood (Q220415) is synonymous with *Raindean Wood*, also *Uphill Wood*.

Tenterden. The records for this in Stainton's *Manual of British Butterflies and Moths*, are those of S. C. Tress Beale, and mostly refer to *Knock Wood* (Q895352).

Wateringbury. Goodwin used this place name loosely to cover *Mere-worth Wood* (Q650555) and other localities within a few miles of his house, Cannon Court, Wateringbury.

West Wickham Wood (Q380649), otherwise *Spring Park*, is partly in Surrey. A well-worked and most productive locality during the nine-

teenth century, now overrun by the populace and degenerated owing to neglect. It is seldom possible to say to which county most of the early records refer, so for the sake of convenience, the whole locality is here treated as being in Kent.

Willesborough. Rudland's records from here result from species noted at an m.v. trap in his garden from September 1953 to December 1958. It was operated every night except during high winds or prolonged frost. The garden is situated on a sandy ridge overlooking farmland and a stream beyond, from which the ground rises towards areas of woodland. Half a mile to the north east is a further wooded area.

Wye. Rudland's records from here result from species noted at an m.v. trap at Wye Agricultural College from April 1953 to December 1958. It was operated by a time switch every night during this period. The spot is adjacent to wooded areas, and within half a mile of farmland and chalk downland. Half a mile to the west is the River Stour.

ARTIFICIAL FACTORS AFFECTING DISTRIBUTION AND CHANGE OF STATUS

Various man-made factors have, particularly within the past hundred years, contributed to the depletion of our native lepidoptera. These may be classified briefly as: (1) Over-cultivation; (2) Over-population; (3) Destruction and neglect of woods; (4) Mass plantation of conifers; (5) Fires, particularly heath fires; (6) The gradual encroachment upon the north-west portion of Kent, of London and its south-eastern suburbs. Owing to the effects of the last category, numerous species have become extinct in this particular area, and others seriously depleted. In fact, nowhere else in Kent, as yet, have lepidoptera decreased so noticeably as in this comparatively small portion of the county.

Since the last war, the Forestry Commission has systematically carried out extensive planting of conifers in many woods throughout Kent. Because of this, damage to deciduous woodland and its associated ground flora, must have already reached considerable proportions†, indeed, it is forecast that in a few years time, their destruction will have become complete in many areas. The ultimate effect that these transformations will have on many of our more local woodland lepidoptera, not to mention various other branches of natural history, is thus likely to prove as disastrous as anything that has yet occurred. A few species, however, notably spruce feeders, seem to have increased of late owing, no doubt, to these activities, viz. *Thera variata* Schiff., *Eupithecia tantillaria* Boisd., *Eulia formosana* Hübn., *Cacoecia aeriferana* H.-S.

As a contrast to the above, "overcollecting"—the cause most often assigned to the depletion and destruction of lepidoptera—appears to have had but little ill effect. This, moreover, in a county where the amount of collecting done possibly exceeds that of any other.

NOTABLE CHANGES IN THE DISTRIBUTION OF SOME BUTTERFLIES

There is evidence to show that a natural factor, or combination of factors, effectively controls distribution. We appear to know little about this potential, other than that it manifests itself by causing

† A. M. Morley informs me that at West Wood (Division 8), where the conifers are over thirty years old, there has been a great change in the lepidoptera.

periodic range extension and contraction, sometimes over a very wide area.

Certain butterflies have been very much subject to the effects of this influence; for example: *Apatura iris* Linn., formerly widespread and locally plentiful in Kent, is now rare and apparently restricted to the weald; *Limenitis camilla* Linn. and *Polygonia c-album* Linn. are fairly generally distributed and not scarce, though heretofore, they were rare or extinct; *Leptidia sinapis* Linn. and *Aporia crataegi* Linn. both became extinct owing to a gradual decline, and in the case of *crataegi*, Kent was its last stronghold in Britain. *Thymelicus lineola* Ochs. once apparently restricted to the north coast, is now widely distributed and common in the county. Others that have shown remarkable changes in distribution are *Melanargia galathea* Linn., *Pararge megera* Linn., *Eumenis semele* Linn., and *Thecla betulae* Linn. However, undoubtedly the most striking case of this kind, at least of recent times, is *Pararge aegeria* Linn., a butterfly totally absent from Kent for many years prior to 1942, since when it has spread from the west over most of the county, to become one of our commonest woodland butterflies.

SOME REMARKABLE RECENT OCCURRENCES AND CHANGES IN DISTRIBUTION

Generally speaking, we know much less about changes in distribution among moths than butterflies, principally because of their nocturnal habits, and the fact that with many of them, so little is known of their early stages in nature. Within the past twenty-five years, and especially since the war, many extremely interesting and unusual moths have been noted in Kent, as well as some remarkable changes in distribution. It may, therefore, be worth while to mention here the more interesting species, and to place these in groups according to certain indications. It should be understood, though, that owing to lack of evidence, their location in such categories can in many cases be no more than conjectural.

* Indicates a species for which there was no previously confirmed record for Kent, prior to 1935.

(1) Those that have or may have extended their range into Kent from adjacent counties: *Hyloicus pinastri* Linn., *Amathes ditrapezium* Borkh., *Aporophila nigra* Haw., *Calophasia lunula* Hufn.*, *Nonagria algae* Esp.*, *Cucullia absinthii* Linn.*, *Hapalotis venustula* Hübn.*, *Thalera fimbrialis* Scop.*, *Euphyia luctuata* Schiff., *E. cuculata* Hübn.

(2) Those that have, or may have, been present in the county all along, but at sufficiently low level of density to have hitherto escaped detection, and whose distribution has in a number of cases lately increased: *Celama trituberculana* Bosc. (*aerugula* Hübn.), *Eilema deplana* Esp., *Actebia praecox* Linn., *Hadena compta* Fabr., *Hydraecia petasitis* Doubld., *H. hucherardi* Mab.*, *Nonagria dissoluta* Treits., *Minucia lunaris* Schiff., *Catocala fraxini* Linn., *Aplasta ononaria* Fuessl., *Scopula nigropunctata* Hufn., *Eupithecia insigniata* Hübn., *E. millefoliata* Rossl., *E. egenaria* H.-S. (*arceuthata* Frey.)*, *E. valerianata* Hübn.*, *Anticollix sparsata* Treits., *Eulia cinctana* Schiff., *Hypercallia citrinalis* Scop. (*christiannana* Linn.), *Hyponomeuta irrorella* Hübn., *Ethmia sexpunctella* Hübn.*, *E. bipunctella* Fabr., *Coleophora otitae* Zell., *Pammene aurantiana* Staud.*.

(3) Suspected immigrants: *Notodonta tritophus* Schiff., *Euxoa cursoria* Hufn.*, *Cosymbia pupillaria* Hübn.*, *Itame fulvaria* Vill., *Chilo cicatricellus* Hübn.*, *Ancylolomia tentaculella* Hübn.*; and among the butterflies: *Parnassius apollo* Linn., *Nymphalis polychloros* Linn., *N. xanthomelas* Esp.*

(4) Those that are chiefly of interest owing to a remarkable extension of range within the county, or because of colonisation of new areas: *Tetthea ocularis* Linn., *Nonagria sparganii* Esp., *Cosmia pyralina* View., *Zygaena lonicerae* Esp., *Lycia hirtaria* Clerck.

(5) A miscellaneous group, some of which may be immigrants temporarily resident in Kent: *Apatele auricoma* Fabr., *Simyra albovenosa* Goeze*, *Amathes glareosa* Esp., *Arenostola fluxa* Hübn.*, *Enargia paleacea* Esp., *Jaspidia deceptor* Scop.*.

INTRODUCTION, RELEASES, ESCAPES, IMPORTATIONS

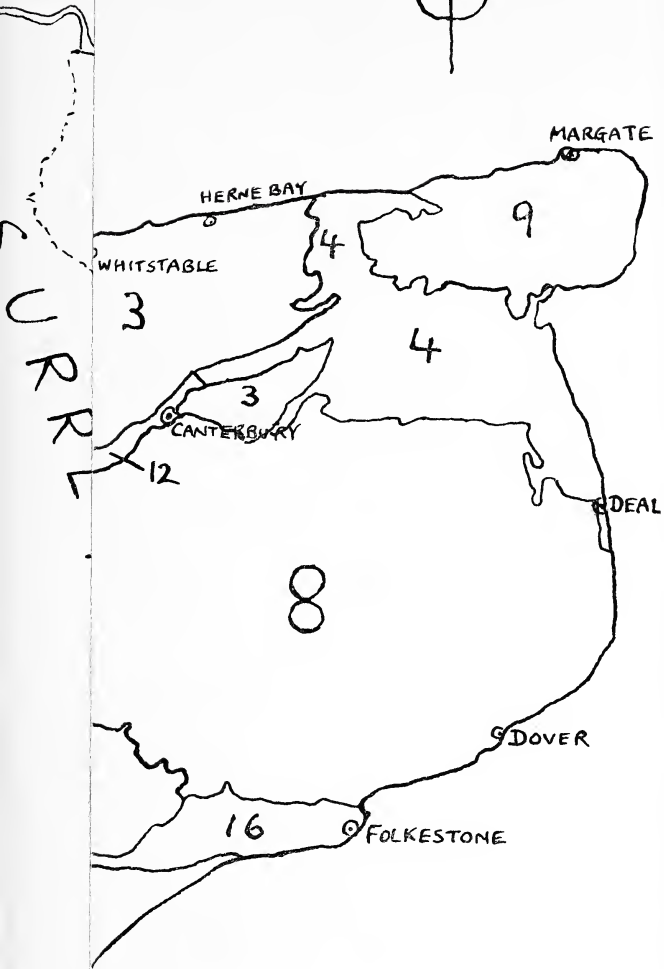
These can present serious problems to someone who is endeavouring to keep true records of local distribution. The difficulties are when some misguided individual, without giving a thought to the consequences, introduces a local native or immigrant in the hope that it will establish itself, or who casually releases a species likely to upset local records. It is bad enough that such things happen; however, it is much worse if we know nothing of them. The fact that *Limenitis camilla* Linn. was introduced into the Watlington district in 1908, that *Papilio machaon* Linn. ssp. *bigenerata* Vty. was liberated in numbers c. 1939, and that there has been periodic distribution of *Nymphalis antiopa* Linn. are regrettable in themselves, but by having knowledge of these, one is at least able to set a proviso on records that might not otherwise be suspect.

In consequence of the foregoing events, it is earnestly requested that those who may have released lepidoptera in Kent in the past will notify me of details, and if they contemplate doing so in the future, they will be so good as to communicate with me beforehand.

Carefully organised introduction of a number of species is being carried out from time to time at a private sanctuary (Q595536) near Otford. The locality consists of four acres of chalk down and adjoining beech hanger, and was purchased in 1957. The owner, E. G. Murray, has agreed to liberate only those species which both he and I agree will not upset local recording, and for his willing co-operation in this matter I wish here to tender my thanks.

ABBREVIATIONS OF SOME WORKS CITED

- | | |
|---------------------|--|
| Barrett. Br. Lep. | Barrett, C. G. Lepidoptera of the British Isles. 1893-1907. |
| E. & Y. (1949) | Embry, B. and Youden, G. H. Butterflies and Moths found in the Dover and Deal district. |
| Given (1946) | Given, J. C. M. (Editor). Royal Tunbridge Wells, Past and Present. Lepidoptera. Pp. 138-149. By E. D. Morgan. |
| Juby & Hards (1925) | Marriott, St. J. (Editor). British Woodlands as Illustrated by Lessness Abbey Woods. Lepidoptera. Pp. 60-66. By J. Juby and C. H. Hards. |



DUNGENESS





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NOTE:—Periodicals and Society Proceedings and Transactions cited here and which appear in the Third Edition (1952) of The World List of Scientific Periodicals Published in the years 1900-1950, are abbreviated accordingly.

SIGNS AND ABBREVIATIONS

ab	Aberration.
coll.	Collection.
c.	Circa.
det.	Determination.
div.	Division.
†	Denotes that I have seen this particular specimen.
m.v.	Mercury vapour light.
obs.	Observation, observations.
♂, ♀	Male, female.
*	Signifies doubt as to the correct division into which the record has been placed.
[()]	Signifies total exclusion or recorded in error.
[]	Signifies doubt as to correctness, not amounting to certainty of error.
f.	Form.
R.C.K.	Rothschild-Cockayne-Kettlewell Collection.
ssp.	Subspecies.
C-H	Observations and records of the compiler.
N.d.	No date.

NATURAL FOODPLANTS AND FOODSTUFFS

Unless stated to the contrary, only the food upon which a species occurs in a state of nature is given. In the absence of such information, I have from time to time included within square brackets a food with a particular species when there was good reason to suspect that this was its natural pabulum in Kent.

The names of plants used by me accord with those of A. R. Clapham, T. G. Tutin and E. F. Warburg, *Flora of the British Isles* (1952).

ACKNOWLEDGMENTS

The success of a work of this kind naturally depends to a great extent on the co-operation of others, and I am fortunate in being able to say that in this respect I have never once been refused information or assistance.

Many people have supplied records and some have helped in other ways. As from time to time the number of these contributors increases, I propose to acknowledge help received at the end of the work, for I shall then know all those whom I have to thank.

REQUEST FOR ADDITIONAL INFORMATION AND NOTIFICATION OF ANY ERRORS OR OMISSIONS

I would be glad to receive additional records, also information of any errors or omissions, the results of which may be incorporated in a supplement.

POSTSCRIPT

It is expected that the generic and specific nomenclature followed will be that of Heslop (*op. cit.*). At present, however, only a comparatively small portion of this list has been published, and it has been decided that in order for it to be acceptable, it may be necessary to amend as well as to make certain alterations to it, notably respecting classification and the nomenclature of super-generic names. I have been advised in this matter by a number of prominent members of the staff of the British Museum (Nat. Hist.), whose help I propose to acknowledge in due course.

RHOPALOCERA

PAPILIONIDAE

***Papilio machaon* L. ssp. *bigenerata* Vty.:** Swallowtail.

Immigrant. Vegetable gardens, marshes, clover fields, etc.; on Cultivated Carrot foliage, Fennel, Garden Rue, Pepper Saxifrage. Recorded from every division except 6a, and mostly from the eastern half of the county, where it has appeared widely scattered, but with a decided preference for low-lying areas.

The butterfly has principally occurred in July and August, and there are comparatively few instances of first generation May-June insects. Since 1850 it has appeared in Kent on an average of approximately once every three years, and, except during the period 1887-99 when none was recorded, there has been no interval of more than nine years when it has been absent. From 1939 to 1948 it occurred annually, and in 1940 thirty-three individuals (mostly larvae) were noted, the largest number ever recorded during any one year.

There is no direct evidence of winter survival,¹ but there are indications that the insect was temporarily established in the Deal neighbourhood between 1857-69, and in the Hythe and Sandwich areas between 1918-26 and 1940-49.

Early History.—The earliest reference to *machaon* in Kent is by Wilkes (120 *Copper-plates of English Moths and Butterflies*, 47-48) who wrote: "Being in a Meadow near Cookham, in Kent, on the 5th day of August, 1748, I observed a female *Swallow-Tail* hovering over certain plants, which, taking particular notice of, I found to be the *Meadow Saxifrage*,² and, examining them carefully, I discovered four eggs just laid by the *Fly*". The butterfly "may be taken in the Meadows and Clover Fields about Cookham near Westram in Kent".

In 1828, Stephens (*Haust.*, 1: 8) gave "near Peckham" (possibly in Surrey) as a locality, and added that "it was formerly abundant at

¹I have no confirmation of the statement by E. B. Ford (*Butterflies*, 303), that "the Hythe district was known to early entomologists as a locality for the Swallow-tail" (C.-H.).

²Dr. Rose informs me that Pepper Saxifrage (*Silene silaus* (L.) Schinz & Thellung), is the plant intended (C.-H.).

Westerham in Kent". In a letter to Stephens, Miss Harvey wrote that a larva was found on 7th July (1827), feeding on carrot in a garden adjoining some marshes near Deal, and that she later reared it (Stephens, *Haust.*, 1: 145; Bree, *Mag. nat. Hist.*, 5: 336; Smith, *Entomologist*, 11: 172).

The following is a chronological account of its subsequent occurrence.

1857-86.—1857: Dover, August, one (Knaggs, *Ent. week. Int.*, 2: 181); Herne Bay, August (Frohawke, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1922-23: 140); Darland Hill, female (Chaney, *Ent. week. Int.*, 2: 172). 1858: St. Margaret's Bay, three (Harding, *Ent. week. Int.*, 4: 164); Ashford, three larvae (Russell, *Ent. week. Int.*, 4: 156); Deal, five larvae on fennel (Harding, *Ent. week. Int.*, 4: 197). 1859: Near Herne Bay, seven (Butler, *Ent. week. Int.*, 6: 179). 1862: Sheerness, one (Walker, *Ent. Rec.*, 10: 102). 1868: Wingham district, one (Hammond, *Entomologist*, 4: 160). (1869): "Has been met with year after year on the East Cliff, Dover, beyond the Castle" (Knaggs, *Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 80). 1870: One in T. H. Briggs's coll. sale labelled "Folkestone 17.10.1870" (A. M. Morley). 1877: Near Herne Bay, two (Cooper, *Entomologist*, 10: 299); Stone, six larvae in a herbalist's garden on garden rue (Farn, *Entomologist*, 10: 253; and in *V.C.H.* (1908), where the date is erroneously given as 1874). 1886: Herne Bay-Whitstable, one in early August (Jacoby, *Ent. mon. Mag.*, 23: 88).

1900-57.—1900: Blean Woods, one, mid-May (Browne, *Entomologist*, 33: 248); Broadstairs, male (Mann, *Entomologist*, 33: 248); Hythe, one (Mandy, *Ent. mon. Mag.*, 36: 160); Farnborough, female, three larvae on garden carrot, July 17, and after (Alderson, *Ent. Rec.*, 12: 274); near Hythe, female, August 15 (Hutchinson, *Entomologist*, 33: 267); Folkestone, two, August 17 (Pickett, *Ent. Rec.*, 12, 272) [c. 1900]; Snodland, one (Reid, *S.E. Nat.*, 1904: 48). 1906: East Kent, one, July. T. Blest (Goodwin coll.). N.d.: Faversham neighbourhood, larvae found several times (*V.C.H.* (1908)). 1914: Hook Green (Div. 13), one in cottage garden (Morgan, *Entomologist*, 47: 301). 1917: Godmersham, one, August 5 (Theobald, *Entomologist*, 50: 232); Whitehill Wood, near Canterbury, two, August 6-13 (Stanbridge, *Entomologist*, 50: 232); Folkestone, one in mustard field, August 25 (Pearson, *Entomologist*, 50: 281). 1918: Minster, late July; Birchington, larva on carrot, September 12 (Theobald, *Entomologist*, 51: 234). c. 1918: "I was told (I think by Dr. Nash) that many collectors went to Sandwich for *machao*n about 1918 and were successful" (A. M. Morley, *in litt.*). 1918-26: Hythe, three taken in three consecutive years (J. and D. Saunders, *vide* A. M. Morley). 1926: Lyminge, one seen by Dr. C. H. Goodall (A. M. Morley). 1929: Hythe, one, D. Saunders (Morley (1931)). 1930: Dungeness, female in clover field, August 26 (Williams, *Ent. Rec.*, 43: 49). 1932: Sheppey, one, July 21 (Pellatt, *Ent. Bull.*, 1938: 3 (31) 98). 1933: Birchington, one, August 13 (Labouchere, *Entomologist*, 66: 279); Bekesbourne, one, August 10 (D. G. Marsh); Folkestone, one seen by F. A. Labouchere (A. M. Morley). c. 1933: Reculver, one, J. How (C.-H.); Herne Bay, one (D. G. Marsh). 1935 or 1936: Dover, larva on fennel (Gardiner, *Ent. Gaz.*, 10 (1): 5). 1936: Littlestone, one, May 17 (Scott, *Entomologist*, 69: 168); East Blean Wood, one, May 19, J. Shepherd (A. J. L. Bowes); Dymchurch, two,

July 24; Capel-le-Ferne, one, August 29 (Morley, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1936-37: 47). 1939: Sittingbourne, several larvae on carrot (Woodcock, *Rochester Nat.*, 1948: 6 (133) 5). 1940: Ashford, one, May 15; Sellindge, three larvae on carrot, early July, two imagines July 14, one about September; near Deal, four larvae; Sturry, four larvae on carrot, August (Morley, *Entomologist*, 74: 152). Wye, several larvae on carrot, early July, S. G. Jary (Arnold, *Sussex Mag.*, 14 (12) 426); Brenzett, sixteen larvae on carrot, July (Blezzard, *vide* A. M. Morley); Herne Bay, male, August 5, A. J. L. Bowes (Dannreuther, *Entomologist*, 73: 249); near Rochester, one taken (*vide* A. M. Morley). 1941: Eastry, one, June 25 (Gillman, *Dover Express*, July 4, 1941); Herne Bay, female, July 26 (Shepherd, *Entomologist*, 75: 46); Ash, dozen larvae on carrot, August, progeny liberated, 1942 (Gillman, *Dover Express*, August 8, 1941). 1942: Northdown Park, Margate, one, August 12 (W. D. Bowden). 1943: New Romney, one, August 12; Harbledown, seven larvae on carrot, September 20 and after; Ashford, four larvae on carrot (Jary, *Ent. mon. Mag.*, 77: 73, 79: 255, Sankey, *Kent. J.*, 6: 18); Sellindge, three larvae, September (Morley, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1944-45: 18); Sandwich, four larvae, September; Sholden, larva, September, A. M. Morley). 1944: Willington near Maidstone, larva, July, A. J. Golding (Beaufoy, *Bull. Amat. Ent. Soc.*, 1944: 6 (66) 27); near Lydd, two, August 6 (Dannreuther, *Entomologist*, 78: 55); Wye Downs, one, August 6; Bilting near Wye, one, August 17 (Sankey, *Ent. mon. Mag.*, 80: 237). 1945: Pinden (Div. 6), one, May (*vide* E. J. Hare); Folkestone, larva, July 7; male at lavender, July 30 (Morley, *Entomologist*, 80: 175); Benenden, one, July 17; Sandhurst, one, July 24 (Bull, *Entomologist*, 78: 165); Ramsgate, two, July 20-30 (Fennell, *Entomologist*, 79: 174); near Tonbridge, male and female taken in clover field by W. J. Walker, July 29; near Ashford, one, August 2, E. Scott (Riley, *Entomologist*, 78: 142); Westwell, female, July 23, one end of July (Scott (1950)); Brenchley, one on buddleia, July 29 (Fitzmaurice, *The Times*, August 21, 1945, p. 6); near Deal, one, August 5 (Gummer, *Ent. Rec.*, 57: 102); Ham Street, three larvae on carrot (Oliver, *The Times*, July 19, 1946, p. 5); Cheriton, one, taken August in lucerne field (A. M. Morley); Seasalter Marshes, male, taken August 15 (McKeever, *Field*, October 6, 1945, p. 355); Cage Green near Tonbridge, female taken on buddleia, August 18 (Dyer, *Bull. Amat. Ent. Soc.*, 1947: 7: (87) 126); Abbotscliff and Folkestone Warren, several (Batchelor, *Entomologist*, 83: 94); Sandhurst, two larvae on carrot, September 3-8 (Bull Diary). 1946: Hawkhurst, one, May 11, Miss Davenport Jones (G. V. Bull *per* Rothamsted); Tunbridge Wells, male at *Aubretia*, May 12, E. G. Bretherton (Rothamsted); Shooters Hill (Div. 1), one fresh dead *bigenerata*, June 6, found by J. F. Burton (D. F. Owen); Abbotscliff, two; Sandwich, one (Batchelor, *Entomologist*, 83: 94); Rochester district, several larvae (Woodcock, *Rochester Nat.*, 1948: 6 (133) 5); St. Margaret's Bay, female, taken second week of August (Molesworth, *Entomologist*, 81: 71). 1947: Sheerness, one seen July 2, A. Grant; Orpington (Div. 1), two seen by K. Bourne, September 2 (Dannreuther, *Entomologist*, 81: 112); Kingsdown, one, August 1 (Neal, *Bull. Amat. ent. Soc.*, 1948: 7 (89) 150); Reading Street, two mid-August (Hunt, *Rep. Thanet Fld. Cl.*, 1948: 123); Dover Harbour, one, August 20

(Molesworth, *Entomologist*, **81**: 71). 1948: Wye Crown, one, May 12, C. A. W. Duffield (Scott, *Entomologist*, **82**: 106; Scott (1950)). 1950: Frittenden, two, late July (Bull Diary); Richborough, one, August 15 (D. F. Harle); Kent, one "lately seen twice" (*The Times*, September 5, 1950, p. 8). 1952: St. Lawrence, two larvae on carrot, June (W. D. Bowden). 1953: Folkestone Warren, one, June (K. Self *vide* A. M. Morley); Tankerton, female, August 15 (Atkinson, *Ent. Rec.*, **65**: 296). 1954: Hythe, one seen in a garden in July by A. P. Adams (C.-H.). 1957: Burham, one, June 1 (Philp, *Ent. Rec.*, **69**: 245).

[The following releases are noteworthy:—Sturry Marshes, pupae (Hammond, *Entomologist*, **4**: 159). Snodland area, many imagines *ex* Wicken Fen (Reid, *S.E. Nat.*, 1904: 48). Herne Bay, *bigenerata* imagines, 1941 (Shepherd, *Entomologist*, **75**: 46). P. Cue told me that about 1939 he released some 20 German *machaon* pupae on Westbere Marshes, and the following spring at Ashford, 100 imagines from the same source (C.-H.).¹]

VARIATION.—The specimen from Herne Bay taken in 1857† has deep-yellow ground and appears referable to *ab. aurantiaca* Speyer (C.-H.).

FIRST RECORD, 1717: "caught about London" (Petiver, *Papilionum Britanniae*, 1). The first certain Kentish record, however, is that of Wilkes (*vide supra*).

The form found in Kent is the widespread central European race *bigenerata* Vty., which differs from the endemic East Anglian *flavus* Tutt (Jordan) = *britannicus* Seitz, by its paler ground, less heavy lines along nervures, narrower and more even width of dark submarginal band.

[(*P. bianor* L.

Doubtless an escape.

1. "Mr. Frohawk reported a specimen of the eastern *Papilio bianor* from Welling, Kent; probably an escape" (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1918-19: 59).

Note: For references to its occurrence elsewhere in Britain, cf. *Proc. S. Lond. ent. nat. Hist. Soc.*, 1917-18: 50; *Ent. mon. Mag.*, **53**: 259, 278.)]

[*P. podalirius* L.: Scarce Swallowtail.

Vagrant?²

8. A. Russell wrote on October 8, 1858: "A most splendid larva of the scarce Swallow-tail was found in the neighbourhood of Deal* and is now in the possession of G. Wilkes, jun." (*Ent. week. Int.*, **5**: 43). G. H. Heath exhibited a damaged specimen caught near Wye Downs; W. J. Kaye remarked on the small size, but suggested it was a liberated specimen (*Proc. Cy. Lond. ent. nat. Hist. Soc.*, 1903: 6); the specimen in the collection of the late G. H. Heath is labelled "Wye Downs, above Lyminge 5 miles from Folkestone, F. Hall, end of August, 1895" (Newman, *Entomologist*, **80**: 67).]

¹Bull. *Entomologist*, **78**: 165, probably refers, despite the fact that he gives the date as 1943.

²Williams (*Migration of Butterflies*, 44) states that the only evidence of migration in this species is that of Gatke (1895), who records a single specimen seen in Heligoland.

[**Parnassius apollo** L.: Apollo.

Vagrant?

Altogether four *apollo* have been recorded from Kent. It is impossible to say with any certainty how these came to be here; there are indications, however, that at least the 1955 specimen was a casual adventive. It is perhaps significant that all occurred on or not far from the coast between Deal and Folkestone, a rocky littoral in division 8 not exceeding 14 miles in extent.

Note: For an account of the history of *apollo* in Britain, cf. Morley and Chalmers-Hunt, *Ent. Rec.*, **71**: 273-76.

8. In a letter to Edward Newman, dated February 1, 1856, G. B. Wollaston stated that one was captured on the cliffs at Dover¹ at the end of August or beginning of September 1847 or 1848 (*Zoologist*, 5001). On August 28, 1889, one was seen along the edge of the cliff some distance beyond the Convict Prison at Dover by one of E. Sabine's sons (*Entomologist*, **22**: 278). A. F. Common records that a fairly good specimen was purchased among various insects with a note "Captured behind St. Margaret's Bay, 1898, E. Clarke" (*Entomologist*, **68**: 212). Finally, a female was taken by Peter Scott in the Warren, Folkestone, on August 3, 1955 (*Ent. Rec.*, **67**: 273); it had paired as shown by the underside, and B. C. S. Warren remarked that it was most like the Jura form.]

PIERIDAE

Aporia crataegi L.: Black-veined White.

Resident, now extinct.¹ Orchards, fields, lanes, etc., on hawthorn, blackthorn, apple, plum. Formerly locally common, but subject to violent numerical fluctuation.² Recorded from divisions 2-4, 6a, 6-9, 11-12, 14, but restricted to north-east Kent after 1885. Last taken in 1922, and not certainly observed since.³

Early History.—The earliest traceable reference is that of Stephens (*Haust.*, **1**: 27), who writes: "Near Herne Bay, in Kent, it abounds and I believe regularly". Shortly after this it is recorded that it occurred, presumably in 1831, near Dover (Bree, *Mag. nat. Hist.*, **5**: 334). In 1844, according to Goss (*Ent. mon. Mag.*, **23**: 217) it was at Wye, "the commonest butterfly in the neighbourhood . . . but had disappeared from the district since 1859"; and in 1845, Bartlett writes (*Zoologist*, 1083) that he took six *crataegi*, presumably in the Barham (Div. 8) neighbourhood.

1850-1890.—The species appeared in phenomenal numbers early during this period with peak abundance around the mid-1850's. This spate, however, was followed by a remarkable decline, from which it seems it never really recovered. (1850-66): At Strood it was abundant, larvae on whitethorn hedges surrounding grazing fields almost in the town (Tutt, *Ent. mon. Mag.*, **23**: 220); at Chatham, "up to 1866 it occurred commonly in the district, but was always very local" (Walker, *Ent. Rec.*, **10**: 102). c. 1854: Chattenden Roughs, Four Elms Hill, Lodge Hill; abundant, in fact spread over the whole of the hundreds of Hoo

¹This was undoubtedly the *apollo* referred to by Hills (in J. W. Walton, *Folkestone and the Country Around* (1925) 72) as having been taken in "Little Switzerland" [a guide book term for the Warren].

and Shamwell, and in some seasons being more commonly seen than *Pieris brassicae*; Brompton, pupa in garden; none heard of since 1859 (Chaney (1884-87)). c. 1855: "Mrs. Butler of Folkestone showed me an old collection containing four specimens taken in the Warren about 1855" (A. M. Morley). 1856: Herne Park, two; Minster, one, July 21 (Turnbull, *Ent. week. Int.*, 1: 132). N.d.: Knock Wood, one taken, the only one seen in this immediate neighbourhood . . . "abundant in some parts of Kent, not far from Tenterden" (Beale, *Substitute*, 136-37); Sturry (Stainton, *Man.*, 1: 18). 1857: Strood, in profusion with "empty pupa-skins on a paling under an apple tree" (Latchmore, *Ent. week. Int.*, 2: 116). c. 1858: Chattenden, very abundant in late fifties, pupae on blackthorn stems, A. B. Farn (*V.C.H.* (1908)). 1858¹: Near Strood, twenty taken (Latchmore, *Ent. week. Int.*, 4: 155); Ashford district, taken in considerable numbers; not previously seen in this locality (Russell, *Ent. week. Int.*, 4: 156); Herne Bay, between Herne Bay and Canterbury, commoner than the common whites by two to one; taken at rest on heads of corn, "I once took four from one corn-stalk", many pupa skins along the hawthorn hedges (McLachlan, *Ent. week. Int.*, 4: 125; *Ent. mon. Mag.*, 29: 132); possible to net four or five at a time, they appeared particularly fond of fields of broad beans (Ramsay Cox in Newman *Br. Butts.*, 168). 1859: Near Herne Bay, two (Butler, *Ent. week. Int.*, 6: 180): "Took five in Kent; not nearly so common as usual" (Allchin, *Ent. week. Int.*, 7: 187). N.d.: Woods near Maidstone (Newman, *Young England*). 1860: Herne Bay, two (Butler, *Ent. week. Int.*, 8: 172). 1861: Kent, one only (Cox, *Ent. week. Int.*, 10: 123). 1862-63: Dover, taken on site of Victoria Park; it was never very common; not seen since (Hall, *Ent. mon. Mag.*, 24: 77). N.d.: Luddenham, Dunkirk, Shottenden, Selling—H. A. Stowell; Wingham, near Nonington, Sturry, uncertain in appearance—W. O. Hammond (Newman, *Br. Butts.*); occurred plentifully about Sheerness (*V.C.H.* (1908)). [1864: Not seen during an exploration of the country between Ashford and Herne Bay (Goss, *Ent. mon. Mag.*, 23: 217)]. 1870: One "bred from a caterpillar found on cliffs between Herne Bay and Reculver, feeding on sloe" (S. Wachter *MS.*). Faversham, "I have been much puzzled for several years by finding the pupae on posts and in the garden, as we have no whitethorn near; but this year I was fortunate enough to find the larvae feeding on the apple trees and the pupae on the trunks" (Skelton, *Entomologist*, 5: 164). 1872: Ashford neighbourhood (Chittenden, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1899: 107); Cuxton, one taken in clover field (Tutt, *Ent. mon. Mag.*, 23: 220). c. 1875: Folkestone Warren, W. Davis (Webb, *Ent. mon. Mag.*, 24: 131). 1882: Dover Town, one taken (Webb, *Ent. mon. Mag.*, 24: 131). 1884: Chattenden, one by Peak the keeper, who said it was the last taken here (H. C. Huggins). 1885-90: Near Sandwich, captured annually, including seven in a lane by Burton on July 13, 1887 (Webb (1891)); Webb, *Ent. mon. Mag.*, 24: 131, 28: 190). N.d.; Detling, taken commonly by C. B. Antram when a boy (Antram,⁵ *Ent. Rec.*, 63: 9). 1886: Herne Bay, male in my coll. labelled "Herne Bay. 1886. A. Cowper Field" (C.-H.). 1887: Dover district, nine taken (Stockwell, *Ent. Rec.*, 9: 123).

(To be continued).

Sittingbourne, June, seen in great numbers by J. Grayling in his garden (Butler, *Ent. mon. Mag.*, **24**: 131).

1890-1922.—By 1890, the butterfly appears to have completely withdrawn to that part of Kent roughly north-east of a line extending from Herne Bay to Canterbury thence to Dover. In this area, judging from the records, its metropolis was situated in the orchard district about the villages of Preston, Ash, Staple, Eastry, and Richborough Castle. It was recorded as having been taken annually from 1890 to 1907⁶ inclusive, and to have been particularly common in 1893, 1896, and from 1902-06.

In G. V. Bull coll. were several labelled "Richborough 189—" (C.-H.). "Taken by Miss Jenner at rest on a thistle in a rough marsh at Preston, June 1896. She also captured another within a few days . . . she says there have always been some of them in the neighbourhood and not many years ago they were plentiful" (S. Wachter *MS.*). Ova, larvae, imagines found at same time, 1898 (Dolman, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1898: 110). 1902, about forty seen in one place, "I can only account for six examples captured away from 'home'; the greatest distance between specimens captured was ten miles" (Barrett, *Entomologist*, **35**: 243). "In the Joy collection in the Folkestone Museum there are 15 males and 18 females which he took on July 19 and 20, 1902. He showed me the place which is a lane at Ash-next-Sandwich below and parallel to the main road" (A. M. Morley, *in litt.*). Preston, many taken by W. A. Cope, 1904-05, 1907, and in my collection (C.-H.). Over fifty between June 28 and July 12, 1905, in clover fields adjoining plum orchards (Barrett, *Entomologist*, **38**: 215). On June 22, 1906, Stockwell "watched a female lay some eggs on the extremity of a leaf of whitethorn, of which there was a thick hedge bounding one side of the clover field" (*Ent. Rec.*, **9**: 122). Eastry, 1906, observed commonly in a clover field by H. C. Huggins and J. W. Corder (C.-H.). 1909: "We found two pupae—one near Ash . . . the other in a weedy ditch by an orchard at Preston; from the second we reared a male" (Hunt, *Rep. Thanet Fld. Cl.*, 1949: 477; and J. W. C. Hunt *in litt.*). c. 1914: A. G. Peyton took, in one day, a nice series; they were flying along a hedge of privet in bloom at East Stourmouth (A. M. Morley). N.d.: "I was told that the insect used to occur in a field of lavender at Grove Ferry. W. O. W. Edwards and I went there in 1929 and found the lavender but not the butterfly" (A. M. Morley *in litt.*). 1917: Herne Bay, one taken by a St. Lawrence's Ramsgate schoolboy (Stephen-Jones, *vide* A. M. Morley). 1920: One taken by F. H. Lancum, two others seen within half a mile of this (Lancum, *Entomologist*, **54**: 98).

The last confirmed occurrence of *crataegi* is that of a female taken by J. Shepherd at Herne Bay in 1922; Shepherd showed me the specimen, and told me that none had been released to his knowledge (C.-H.).

[(The following instances of escape or introduction are the only ones known to me to have taken place in Kent (C.-H.)⁸:—"Two large broods escaped from our garden" [at Blackheath] (Tutt, *Ent. Rec.*, 1897: **9**: 123). Westerham and Bexley; foreign stock liberated at Chartwell in 1948-49 (Newman, *Entomologist*, **82**: 140).)]

VARIATION.—In R.C.K. there are the following aberrations from Kent: *lunata* Tutt, three females; *suffusa* Tutt, two males; *metana*

Tutt, two males, one female; together with a large series that appears referable to nominotypical *crataegi*.

FIRST RECORD, 1828: Stephens, *Haust.*, 1: 27.

¹Various theories have been put forward to account for its decline, cf. for example, Webb (1899); Allan (Moths and Memories (1948) 83 *et seq.*); E. B. Ford (*Butterflies*). Tutt (*Ent. mon. Mag.*, 2: 220-221, 24: 36-38).

²Due possibly to parasitical infestation, cf. Martelli, *Boll. Lab. Ent. agr. Portici (Spoleto)* 25: 171-238.

³T. G. Gomm (Diary) believed he saw one at Staple on June 30, 1924. A. M. Morley says (*in litt.*) "In 1931, I saw what I am pretty sure was a *crataegi* flying along the Ashford-Canterbury road near Chilham".

⁴Tutt (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1887: 35), says that hundreds were captured in a field near Chatham in 1868, but I submit he meant 1858 (C.-H.).

⁵Antram died in 1951, aged 81 (see obituary, *Ent. Rec.*, 67: 160).

⁶The records for this period are particularly numerous; for purposes of reference they are (besides those already included in the text) given as follows: *Ent. mon. Mag.*, 29: 64, 132; 33: 43. *Entomologist*, 21: 184; 25: 217; 29: 332; 34: 23, 26; 35: 243; 38: 215; 40: 13. *Ent. Rec.*, 8: 268; 9: 122, 267; 10: 2; 11: 25; 13: 306; 20: 64. *Proc. S. Lond. ent. nat. Hist. Soc.*, 1905-06: 96; 1907-08: 97; 1908-09: 77. *Proc. Cy. Lond. ent. nat. Hist. Soc.*, 1902: 5. E. & Y. (1949).

⁷Hunt (*op. cit.*) has 1910, but J. W. C. Hunt corrects this (*in litt.*) to 1909 on the basis of an old notebook of R. P. A. Hunt.

⁸Tutt (*Ent. Rec.*, 4: 76; 7: 299; 9: 1, 123; *Br. Butts.*, 228-29), supposed it to be extinct by 1880, and suggested its subsequent occurrence was due to introduced stock. He failed, however, to cite a single authenticated instance of introduction in support of this view (C.-H.).

Pieris brassicae L.: Large White.

Resident, reinforced by immigration. Vegetable gardens, cabbage fields, waste places, etc.; on *Brassica oleracea*, *Sisymbrium officinale*, *Reseda*, *Tropaeolum majus*, *Chenopodium*, horseradish. Usually numerous though liable to considerable fluctuation. Found in all divisions, and doubtless present from time to time in every part of the county.

The species not infrequently turns up in April in small numbers, e.g. in 1930, 1940, 1941, 1945, 1946, 1948, 1956 and 1957; and fairly often there is apparently a very small third brood in late September and October, as was the case in 1898, 1924, 1932, 1934, 1939, 1941, 1942, 1945, 1946, 1947, 1948, 1950 and 1953. In 1934 A. M. Morley noted it as late as October 28, and he observes that in 1933 there was quite a large third brood in September.

The larva is most often found on the various cultivated races of *Brassica oleracea*. Sometimes it occurs on nasturtium (*Tropaeolum majus*) and I have found them on this plant in my garden near Canterbury (C.-H.); Carr and Turner (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1924-25: 107) also give *Tropaeolum*, and Kidner (*Diary*) noted that at Sidcup, on September 6, 1916, he found them on horseradish as well as on *Tropaeolum*. Ovenden (*Ent. Rec.*, 21: 33) recorded the larva as abundant at Strood in 1908 on *Chenopodium*; and at Folkestone, A. M. Morley has found them on *Reseda*.

During the past 120 years there have been numerous records of extreme plenteousness of *P. brassicae* as well as others of exceptional dearth. It has been considered therefore worth while to give below a brief survey of such occurrences in so far as they refer to Kent.

1846-1900—Spence (*Stettin. ent. Ztg.*, 8: 376) recorded its presence in great swarms at Dover in 1846, together with *P. rapae* L.; but

Clifford (*Entomologist*, 4: 314) remarked that in 1869, in South London and near Gravesend, it was, together with *P. rapae*, "conspicuous by its absence". Tutt (*Ent. Rec.*, 12: 254) tells how in 1887, he saw the butterfly coming over the Straits of Dover in vast swarms extending along the coast from Deal to S. Foreland. In the early nineties, however, it was, according to Buckle and Prout (*Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1898: 53), again very scarce in the London area; and Walker (*Ent. Rec.*, 10: 102) mentioned it as comparatively rare in 1894 in the Chatham district.

1911-1947—In 1911 at Margate, Colthrup (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1911-12: 63) noted it as very abundant from September 3-11, but that it then suddenly became quite scarce. Kidner (*Diary*) regularly chronicled its appearance from 1909-39 in the Sidcup area (Div. i), noting that it was fairly plentiful up to 1925, that it then became rather infrequent, and from 1932-33 was hardly seen at all, but was again fairly plentiful in 1939. On August 8, 1930, Kettlewell (*Ent. Rec.*, 43: 114) observed "white butterflies" at Broadstairs "in countless thousands, nearly all *P. brassicae*." It was also seen in abnormal numbers on June 2, 1933, between Dover and Ostend, on July 29, 1937, at Dover, and in 1939 at Dungeness, N. Foreland and Sandhurst (Williams, *et al.* (1942)).

In 1943, Dannreuther (*Entomologist*, 77: 59) recorded that in East Kent, *brassicae* was less abundant than in 1941-42, as "three quarters of the larvae were parasitized" by *Apanteles* sp.

A. M. Morley (*in litt.*) says that at Folkestone the butterfly is relatively scarce until late July, and in some years very numerous in August and September: "In 1945 it was in vast numbers; thus on August 1st, I estimated that there were 300-400 in one lucerne field. They were not numerous again until mid-September, when I saw about 100 in the same field against 4 *P. rapae*. In 1947, *rapae* was much more numerous than *brassicae*, e.g. on September 13, 100 to 20 in the same lucerne field".

D. F. Owen (*in litt.*) writes that in 1947 at Greenwich Park, it had much increased since the land was taken over for allotments; and that at Shoreham in 1947 it caused much damage to fields of cabbages, hundreds of cocoons of *Apanteles glomeratus* being seen on fences, walls, tree trunks, leaves and sticks, and that only a few pupae occurred there in the autumn.

VARIATION.—The following aberrations are represented in R.C.K.: *marginata* Grah.-Smith, ♂, Wye, 1906; *ocellata-loberi* Krant, ♀, N. Kent, 1928; *striata* Rocci, ♀, Bromley, 1899; *postici-ochrata* Vty., ♀, Folkestone, ♀, Herne Bay; *lacticolor* Lempke, ♀, N. Kent; *trans ad glaseri* Müll., three ♀♀, Kent; *separata* Pionn, Lewisham, bred 1898.

The ♂ with small black spot on disc of forewing, ab. *nigronotata* Jach., is apparently scarce: one in R.C.K. from N. Kent, 1922; one recorded by Buckstone (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1923-24: 96), Eltham, 1893.

Carpenter (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1906-07: 90) records a series from Folkestone with "discal spot connected to apical patch".

A. M. Morley (*in litt.*) states that third brood specimens taken in September 1933 had "the underside greenish instead of the usual colour".

FIRST RECORD, 1832: Dover, abundant (Bree, *Mag. Nat. Hist.*, 5: 331).

P. rapae L.: Small White.

Resident, reinforced by immigration. Vegetable gardens, waste places, etc.; on *Brassica oleracea*, *Tropaeolum majus*. Abundant—more so than *P. brassicae*—but very occasionally scarce¹. In all divisions, and doubtless occurring everywhere in the county.

The butterfly has sometimes been noted exceptionally early in the year. For example, Robertson (*Entomologist*, 51: 45) records a specimen at Faversham, January 4, 1918; and E. Philp informed me that he found a male just hatched at Maidstone, February 17, 1957 (C.-H.).

The larvae chiefly occur on cultivated races of *B. oleracea*. They have also been found on nasturtium (Miss C. A. McDermott) at Gravesend and Faversham (H. C. Huggins), and at Pembury (A. M. Morley).

The species is often associated with *P. brassicae* (q.v.) in migratory movements. Bartlett (*Zoologist*, 1442) and Long (*Proc. ent. Soc. Lond.*, 1846: 154) recorded that a vast flight invaded the Kent coast from France on July 5, 1846, in which year both *P. brassicae* and *P. napi* also occurred in exceptional abundance.

VARIATION.—This species is noticeably more variable in Kent than either *P. brassicae* or *P. napi*. In R.C.K. are the following aberrations: *impunctata* Le Moulton, ♂, Wye, 1898; *divisa* Gel., ♀, Eltham, 1886; *praetervita* Krul., ♂, Bexley, 1945; *semialba* Carvel, ♂, Cudham, bred 1894; *disconulla* Lempke, Bexley, bred 1904; ♀, Bromley, 1953; *unimacula* Dziur., ♀, N. Kent, 1907; *leucotera* Stefanelli, ♀, N. Kent, 1926; *atomaria* Fruhst., ♀, Broadstairs, 1900; *subtalba* Goodson, holotype, Keston, 1892.

An aberration occasionally occurs in which the spots on the forewing tend to unite to form a band, *fasciata* Tutt; Eltham, ♀, 1913 (R.C.K.), Sandhurst, ♀, July 24, 1942 (Bull. *Proc. S. Lond. ent. nat. Hist. Soc.*, 1942-43 (2), 28); West Wickham, ♀, September 26, 1948 (C.-H.). A rather uncommon aberration, *nigropunctata* Lamb., has a small but distinct black spot in the disc on the hindwings: Folkestone, two ♀♀, September 1897 (South, *Entomologist*, 30: 294); Broadstairs, ♀, 1900 (R.C.K.); Lympne, ♀, September 16, 1932, G. V. Bull (C.-H. coll.). Morley (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1948-49: 42) records *deleta* Strand, a fairly common aberration having the apical spot very indistinct.

FIRST RECORD, 1823: "March 30th . . . walked up Northfleet Cliffs and saw the first white cabbage butterfly" (Arnold, *Robert Pocock*, 176).

¹As in 1869 (Clifford, *Entomologist*, 4: 315; Newman, *idem*) and 1894 (Walker, *Ent. Rec.*, 10: 102).

P. napi L.: Green-veined White.

Resident, sometimes reinforced by immigration. Woods, lanes, marshes¹, damp fields, etc.; on *Cardamine pratensis*, *Alliaria petiolata*², *Tropaeolum*, *Arabis*³. Plentiful and found in all divisions. Along the east coast it appears to show a preference for inland localities⁴ and to be rather uncommon in division 15.

The butterfly appears in May, sometimes in April; there is a second brood in July and August, followed rarely by a partial third generation in October. Sidcup (Div. 1), 1924, one, April 12, one, October 5 (A. R. Kidner); Den Grove (Div. 3), one, April 4, 1938 (C.-H.); Westbere (Div. 3), one, October 10, 1939 (S. Morris).

The species is not given to migrating to anything like the same extent as *P. brassicae* and *P. rapae*; but a number of mass movements are on record. Morris (*Week. Ent.*, 1: 117) observed that an immigration of *napi* from France took place at Dover, July 5, 1846 (cf. *P. rapae* and *P. brassicae*): and Tutt (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1887: 81) stated that he saw it in immense numbers at Deal [in 1887]. Jary (*Entomologist*, 77: 59) records that near Ashford, hundreds were seen migrating on July 25, 1943, and D. F. Owen (*in litt.*) writes that in 1946 thousands were observed in Charlton sandpit (Div. 1), and that it was particularly abundant there on April 22.

VARIATION.—Specimens with abnormally small alar expanse are referable to ab. *napella* Lamb. (*minor* Crombr.; *minima* Vty.); which is represented from Kent in R.C.K., and has been recorded by Chaney (1884-87) and Worthington-Stuart (*Entomologist*, 78: 158).

In the Brit. Mus. is a female taken by Packman at Dartford, with upperside heavily suffused with greyish black, the underside of which is figured by Frohawk (*Nat. Hist. Brit. Butts.*, 1: Pl. 5, fig. 22). [A male ab., perhaps referable to *trans. ad flava* Ckll. was taken at Joydens Wood (Div. 1) by D. F. Owen, July 13, 1946, but is a suspected escape (C.-H.).]

A gynandromorph from Tonbridge is recorded by Featherstone (*Entomologist*, 75: 228); and a somatic mosaic was exhibited by Frazer (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1952-53: 31).

FIRST RECORD, 1827: "Not uncommon in all parts of the vicinity of the metropolis" (Stephens *Haust.*, 1: 21). The first certain Kentish record, however, dates from 1831: Dover vicinity, "I could not help remarking, also, the comparative rarity of an insect exceedingly common in most places, *Pontia napi*" (Bree, *Mag. nat. Hist.*, 5: 331).

¹Burton (*Lond. Nat.*, 1954: 60) states that in the marshes of N.-W. Kent, its typical habitats are saltmarsh pasture, earth river-walls, rough fields and hay, rough scrub and hedgerows.

²H. C. Huggins gives these as natural foodplants in Kent.

³Larvae on *Tropaeolum* (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1924-25: 107); on *Arabis* (Beaufoy, *Bull. Amat. Ent. Soc.*, 1944, 6 (66): 27).

⁴At least in the Folkestone and Dover districts, according to Hall (*Ent. mon. Mag.*, 24: 77), E. & Y. (1949), and A. M. Morley (*in litt.*).

***Pontia daplidice* L.: Bath White.**

Immigrant. Lucerne and clover fields, flowery wasteland, rough chalky places, etc.; on *Reseda lutea* and probably *Sisymbrium irio*. Usually rare; never plentiful.

Since 1818, altogether about 120 *daplidice* have been noted in Kent, mostly in August, and in the north-east (particularly in divisions 8 and 9). The maximum number in any one year was in 1945, when 27 examples were noted, including three larvae. There is no record of occurrence between 1903 and 1934, and on only a few occasions has it appeared in west Kent. There are indications that it occasionally survives to produce a generation, such as was almost certainly the case in 1945.

1818-1842—The earliest known occurrence of the Bath white in Kent is that of a female taken by J. F. Stephens on August 14, 1818, "in the meadow behind Dover Castle" (Samouelle, *Entomologist's Useful Compendium*, 416). Since then it has appeared as follows:—1826: Near Dover Castle, ♂, taken by R. Leplastrier (Dale, *Mag. Nat. Hist.*, **3**: 333). 1827: Near Dover Castle, ♂ (Dale, *loc. cit.*). 1835: ♀, in Dale coll., "Bred at Dover, August 2, 1835" (Walker, *Ent. mon. Mag.*, **43**: 96); Dover, three, August 18-20, taken by N. B. Engleheart and Mr. Leplastrier, jun. (Engleheart, *Ent. Mag.*, **3**: 409; *Proc. ent. Soc. Lond.*, 1835, **1**: 69)¹; one in Dale coll., "taken by a poor boy at Margate in 1835" (Walker, *loc. cit.*). c. 1835: Lyminge, one (Tylden, *Entomologist*, **1**: 204). 1842: Near Dover, two pairs taken in summer by Leplastrier, from which ova were obtained and 3♀♀ 1♂ reared, May 1843 (Bree, *Zoologist*, 113, 201). N.d.: "The late Mr. Leplastrier, of Dover, took the larvae but did not breed them" (Harding, *Ent. week. Int.*, **7**: 61).

1851-1903.—1851: Dover, one taken by Foxcroft (Hall, *Entomologist*, **29**: 59). 1856-57: Kentish coast (Harding, *Ent. week. Int.*, **7**: 48). 1856-79: Ashford neighbourhood, four in Machin coll. sale (Anon., *Ent. Rec.*, **6**: 135). 1858: Margate, female, June 22 (Cox, *Ent. week. Int.*, **4**: 164; R.C.K.); near S. Foreland light, one (Harding, *Ent. week. Int.*, **4**: 164); St. Margaret's Bay, one, July 30 (Dale, *Ent. week. Int.*, **4**: 178); Dover, male, August (R.C.K.); Ashford, one, September 13² (Russell, *Ent. week. Int.*, **5**: 3). 1859: Tenterden, one, July 31 (Fyles, *Ent. week. Int.*, **6**: 163); Kingsdown, one, August 1, another a few days after (Harding, *Ent. week. Int.*, **6**: 155, 171; **7**: 61)³; near Walmer, one (Stainton, *Ent. week. Int.*, **6**: 155). 1867: Dover, ♂, ♀, by Lepelley, J. A. Clark coll. sale (Anon., *Ent. Rec.*, **21**: 294). 1868: Margate, four, July 27-early August (Cox, *Ent. mon. Mag.*, **5**: 105; *Entomologist*, **4**: 130; Cottam, *Ent. Mon. Mag.*, **5**: 106; Newman, *Entomologist*, **4**: 144); Dover, female, August 11 (Sterland, *Entomologist*, **4**: 131); "female, Gravesend, viii 1868, Button, V. H. Crewe coll." (Newman, *Br. Butts.*, 160; R.C.K.). 1870: Near Deal (Woods, *Entomologist*, **6**: 214). 1871: Sandgate, one, autumn; Westcliffe, Folkestone, one (Briggs, *Ent. mon. Mag.*, **8**: 137); near Dover, one (White, *Entomologist*, **5**: 411); near Deal (Woods, *loc. cit.*); St. Margaret's, male, August 25 (White, *Entomologist*, **5**: 446; *Ent. mon. Mag.*, **8**: 166). 1872: Sheldwich, male, July 10 (Malden, *Entomologist*, **6**: 194); Folkestone Downs, male, August 15 (Dale, *Entomologist*, **6**: 214); Folkestone Warren, one, August 18 (Ullyett, *Ent. mon. Mag.*, **9**: 111); near Deal, 2♀♀, 3♂♂, end of August, in a grassy hollow, same spot where *daphidice* was taken in 1870 and 1871 (Woods, *Entomologist*, **6**: 214); Shepherdswell, one, end of August; Castle meadow, Dover, one, end of August, male, September 2 (Stephens, *Entomologist*, **6**: 219); Tilmanstone, one; Dover Castle, one (Seabrook, *Entomologist*, **6**: 236); Dover, one (Jarvis, *Entomologist*, **6**: 213); Dover neighbourhood, four (Gray, *Ent. mon. Mag.*, **9**: 111 (Communication dated August 26, 1872)). 1876: Folkestone Downs, female, August 21 (Briggs, *Ent. mon. Mag.*, **13**: 138). 1879: Diggles Tower, Dover (Webb, *Ent. mon. Mag.*, **24**: 131). 1884: Dover, two, early August (Briggs, *Entomologist*, **17**: 208); between Wye and Sandgate, one, August 20 (Burney, *Entomologist*, **17**: 232). 1885: Folkestone Warren, two (Cooper, *Entomologist*, **18**: 217). 1886: ♂, ♀, "Near Tunbridge Wells, 1886"⁴ (R.C.K.). 1887: Dover, female, C. E. Prince (Curtis, *J. Soc. Brit. Ent.*, **2**(7): 237). 1889:

Crabble (Webb (1891)). 1892: Folkestone neighbourhood, one, September 10 (Partridge, *Ent. mon. Mag.*, **28**: 265). 1893: Dover, one, July 18 (Kingsmill, *Ent. Rec.*, **4**: 299). 1894: Margate, three, July 9-15 (Cooper, *Entomologist*, **27**: 271, *Ent. Rec.*, **5**: 217); Ramsgate, one (Vince, *Entomologist*, **27**: 298). 1895: Deal, four, August (Swinhoe, *Entomologist*, **28**: 337); near Canterbury, one, summer (Briggs, *Sci. Goss*, n.s., **2**: 195). 1897: Dover, female, August 27 (Stacey, *Ent. mon. Mag.*, **33**: 234); Herne Bay, one, August (Butler, *Ent. mon. Mag.*, **33**: 236). 1901: Dover, two, August 11, another a week later (Stockwell, *Entomologist*, **34**: 252); Dane Park, August 18 (Barrett, *Entomologist*, **34**: 318). 1903: Folkestone, female, July 6 (Kingsman, *Entomologist*, **36**: 293)⁵. [N.d.: Sydenham (Div. 1), two, Mason coll. sale (Anon., *Entomologist*, **28**: 112).] [(1906, "Over 200 were seen on the Dover cliffs" (Williams, *et. al.* (1942) (1942)). This is a mistake and should refer to Dorset, cf. *Entomologist*, **71**: 66.]

1934-1950.—1934: Whitstable, female, July 24 (Bowes, *Entomologist*, **67**: 276). 1937: Folkestone Warren, male, taken by Haley, August 15 (Frowhawk, *Entomologist*, **70**: 227). N.d.: Herne Bay, female taken by J. Shepherd (C.-H.). 1945: Ramsgate, six, July 20-30 (Ffennell, *Entomologist*, **79**: 174); North Downs between Wrotham and Eynsford (Div. 6), seven at rest, July-August (Riley, *Entomologist*, **78**: 143); Deal, two males, August 4 (Gummer, *Ent. Rec.*, **57**: 102). Folkestone Warren, three larvae on wild mignonette, August 6 (Kettlewell, *Entomologist*, **79**: 113); Isle of Thanet, male, two females, September 2 (Johnson, *Entomologist*, **78**: 157); Birchington, September 7-9, four males, two females, "certainly bred in this country", probably on *Sysimbrium irio* (Wykes, *Entomologist*, **78**: 172-73; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1945-46: 33; Morley, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 36); male, September 16 (de Worms, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1945-47: 35). 1947: Barham Downs, female, W. Stephen-Jones, July 25 (Dannreuther, *Entomologist*, **81**: 112); Birchington, male, August 3 (Manley, *Entomologist*, **81**: 71); Whitstable, one, August 31 (Turner, *Entomologist*, **80**: 260); Kingsdown, male, August 9, J. Blake (Rothamsted); Birchington, one, September 15 (Labouchere, *Entomologist*, **80**: 260). 1949: Near Ramsgate, male, August 9 (Rivers, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1955: 40). 1950: Birchington, male, female, August 21 (Hyde, *Entomologist*, **83**: 245); Hythe, female, August 21, flying in from sea (Balfour-Browne, *Ent. Gaz.*, **4**(2): 111); Broadstairs, male, August 25, on valerian in chalk pit (Wheeler, *Entomologist*, **83**: 233); Acol, female, August 30, A. J. Dewick (Rothamsted).

FIRST RECORD, 1819: Samouelle, *Entomologist's Useful Compendium*, 416.

¹In Dale coll., one "Dover August 1835 A. Leplastrier" and one ♂ "Dover" (*Ent. mon. Mag.*, **45**: 96); may both refer.

²Possibly one of those in Machin coll. sale noted as having occurred between 1856-79.

³Recorded by Newman (*Zoologist*, 6693) and Stainton (*Ent. Ann.*, 1860: 137) who appear to have confused the dates.

⁴Tunbridge Wells taken by Henry Aris (Aris, *Lond. Nat.*, 1924: 4), possibly refers to this.

⁵This is perhaps referred to at *Ent. Rec.*, **37**: 168.

***Anthocharis cardamines* L. ssp. *britannica* Vty.: Orange-tip.**

Native. Woods and their vicinity, lanes, hedge-borders, field-sides; noticeably absent from marshes¹; on *Cardamine pratensis*, *Alliaria*

petiolata. Fairly numerous in most divisions, but generally less frequent coastally, and perhaps absent from 15; rather uncommon in 1, and of occasional occurrence only towards the metropolis².

It seems to be uncommon in 4, but D. F. Harle (*in litt.*, 1960) says that it is regularly observed in small numbers about Sandwich, and has been seen along roadsides in most parts of the division. For 9, where it is probably casual, the only records are:—Thanet, one, 1920 (Sargeant, *Entomologist*, **53**: 188); Minster, fairly common in lanes, 1944, but only ♂♂; St. Peters, two ♂♂, 1944 (J. W. C. Hunt). Morley states that in Folkestone (Div. 16) it is "quite rare", with less than one per annum on his records. In 2, it has been observed in lanes, etc., but never actually on marshland, at least, not as a breeding species. It has been recorded once only from Sheppey, i.e. one in 1919 (Betts, *Entomologist*, **53**: 67); Plumstead marshes, "often seen in the 1940s" (Showler, *Ent. Rec.*, **68**: 127); Dartford, Stone, Swanscombe, rarely noticed on the marshes west of Erith, and restricted to the rough scrub and hedgerows at the edge of the marshes (Burton, *Lond. Nat.*, 1954: 58); Higham (H. C. Huggins).

The butterfly usually appears from about the end of April and continues well into June. Occasionally it has been noted much earlier. Tunaley (*Ent. Rec.*, **8**: 115) records that one was seen at Chattenden on February 29 (1896), and in 1893 and 1957 it was observed on March 31 and 30 respectively (Rose, *Ent. Rec.*, **4**: 153; Bull, *Ent. Rec.*, **69**: 197). D. G. Marsh (*in litt.*) writes that in Blean Woods he noted specimens in July of several years c. 1930-34; possibly examples of a partial second generation. An extraordinarily late date is of one seen at Sevenoaks on October 7, 1950 (Busbridge, *Entomologist*, **83**: 280).

The principal food plant is in moist situations perhaps *U. pratensis* (lady's smock) and in div. 3 I have repeatedly found larvae and ova on this. Dr. E. Scott tells me that at Westwell (div. 7) he has found it on *A. petiolata* (garlic mustard) and I have also found it on this at Biggin Hill (div. 5) (C.-H.).

VARIATION.—English specimens form a separate race, *britannica* Vty., which is diagnosed as showing the orange-red area less well developed, especially towards the inner margin, and the black median spot larger and deeper black.

The following aberrations are represented in R.C.K.: *radiata* Williams, N. Kent, ♂, 1930; *marginata* Gr., East Farleigh, ♂, bred 1918; *caulotostictica* Williams, East Farleigh, ♀, 1918; Kent, ♀, bred 1891; *ochrea* Tutt, Watlingtonbury, ♀, 1906; *antiquincunx* Bryk., ♂, "Bred by N. Fowler, Deal, 1896".

Dwarf specimens occur from time to time, and are referable to *ab. hesperidis* Newnham; I have both sexes from Ham Street, taken 1949, 1951 (C.-H.).

Williams has recorded the following aberrations: *dispila* Raynor, Bexley; *meridionalis* Vty., Kent (*Trans. Lond. nat. Hist. Soc.*, 1915: 70, 72); *arsenoides* Newnham³, Folkestone (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1939-40: 11); *immaculata* Pabst., N. Kent (*Trans. S. Lond. ent. nat. Hist. Soc.*, 1957: 82).

Webb (*Entomologist*, **21**: 132) recorded a male *ab.* from near Dover with the apical blotch of a clear yellow, which Cockerell subsequently named *aureoflavescens*.

Garrett (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1920-21: 82) exhibited one from Joyden's Wood, "with unusually dark margins to forewings". South (*Entomologist*, **35**: 2) records one from Plumstead "with curious pale orange tips". Watson (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1951-52: 45) exhibited a male from Hythe, 1938, "with pale buff tips". Butler (*Proc. Ent. Soc. Lond.*, 1868: 24) exhibited a pair from Herne Bay, both remarkable for the largeness of the median spot, and the male had "a rudimentary tail to the hindwings".

Gynandromorphs have been recorded by Mead-Waldo (*Proc. ent. Soc. Lond.*, 1909: 9); Greenwood (*Entomologist*, **66**: 153); Newman (*Entomologist*, **87**: 24); McDermott (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1953-54: 35); Kershaw (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1954-55: 33); in R.C.K. is one mostly ♀, labelled "E. A. Cockayne, 1915". An example of homoeosis is recorded by Finzi (*Proc. ent. Soc. Lond.*, 1878: 23); and four others by Williams (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1957: 82).

FIRST RECORD, 1795: "I have bred these elegant little butterflies from caterpillars taken off the green iole plants in my garden [at Darenth"] (Lewin, *Insects of Great Britain*: 64). This is also the first British record.

¹This is remarkable when one considers that in some parts of Britain, marshland is the principal habitat. Indeed, in a marsh at Minford, Merionethshire, in 1959, I found *cardamines* more plentiful than I have ever seen it in Kent; and this comparative superiority in numbers was also noticed by A. M. Morley in a similar situation in Pembrokeshire (C.H.).

²Soon after the last war, irregular wanderers may have temporarily colonized bombed sites in this area. In 1946, according to D. F. Owen (*in litt.*) it was common in the Lewisham district, and was noted at Sundridge Park, Shooters Hill, Lewisham, Lee, Greenwich Park and Charlton, but was noticeably less frequent in 1947. In 1951, Owen (*Entomologist*, **84**: 267) said "nowadays it seems to have completely disappeared from the suburbs" and added that it was last seen at Lewisham in 1946. Showler (*Ent. Rec.*, **68**: 127) records a male, Lessness Woods, 1954.

⁴This appears to be a mixed gynandromorph and Mr. A. L. Goodson informs me that the correct name for it is *arsenoides* Newnham 1900 = *andromorpha* Vty. 1911.

[(*A. belia* Cram. (*crameri* Bufl.))

Doubtfully genuine.

Two males taken August 1887 on the Castle Heights, Dover, by C. E. Prince, and given to A. Druitt, who supposed them to be *Pontia duplidice* L. (Curtis, *J. Soc. Brit. Ent.*, **2** (7): 237).]

Leptidea sinapis L.: Wood White.

Resident, now extinct. Woods, very local; no record of foodplant. At one time, *sinapis* was widely distributed and not uncommon very locally, but subsequently decreased, and by about 1870 appears to have become extinct except in a few localities in East Kent. Here it continued to survive, and was last seen in 1915.

The earliest reference to *sinapis* in Kent is by Stephens (*Haust.*, **1**: 25), who gave it as not uncommon at Darenth Wood (Div. 6A). It was next recorded in 1831 from the Dover neighbourhood by Bree (*Mag. nat. Hist.*, **5**: 333), but no details were included. In 1833, Edward Newman (*Ent. Mag.*, **1**: 318) stated that he had seen it in numbers "in the roads through the woods of Kent", and there are reasons for thinking that he was here referring to Darenth and Birch Woods.

Newman (*Young England* (1860)) mentions Darenth Wood, Swanscombe Wood and Birch Wood as localities where he had himself seen it commonly, all of which are in north-west Kent. It is suspected, however, that by 1860 the butterfly had already become extinct or nearly so in this area¹; indeed, it would appear that the last *sinapis* to have been seen in N.W. Kent was in 1856, when one was taken by Simson in the vicinity of West Wickham² (*Ent. week. Int.*, 1: 116).

In north and mid-Kent, the species persisted until about 1860. Chaney (1884-87), referring to the Rochester district, stated that he had only heard of it from Wigmore Wood (Div. 7), where it was common in 1850, but had since then occurred there but singly up to 1858 or 1859, when it disappeared altogether. In the Maidstone district, Rowland-Brown (*Entomologist*, 52: 277) recorded the existence of a small series³ in the Maidstone Museum labelled "Wateringbury, R. H. Fremlin, 1857"; and there is Goodwin's statement (*teste* Goss in V.C.H. (1908)) that R. H. Fremlin "used to take this species commonly at Wateringbury forty years ago, but that it has long been extinct there".

In the Weald, it was noted by Beale (*Diary*) as having been taken by him about 1855 at Knock Wood near Tenterden (Div. 14); and in 1857, two were taken on May 27 at Tunbridge Wells (Div. 13) (Andrews, *Ent. week. Int.*, 2: 7), and another at Boundes Park near there (Brown, *Ent. week. Int.*, 2: 99). Two other records (also for Div. 13) are for Pembury, where it was recorded as common (Stainton, *Man.* (1856); Weir, *Entomologist*, 11: 92); and one was seen there in 1868 by Cox (*Entomologist*, 4: 224: ii).

The records that follow all refer to the eastern half of the county, where colonies appear to have persisted in Divisions 8 and 16 until about 1895, and for a further two decades in Division 3.

Stowell (*Ent. week. Int.*, 2: 94) records that he took two *sinapis*, June 2, 1857, the Faversham side of Blean Woods, and added that it was new to his local list. Elsewhere in Div. 3, Fenn (*Diary*) wrote that he saw one, May 27, 1866, the Herne side of Blean Woods; and Hammond (in Newman, *Brit. Butts.* (1871)) says "I have occasionally taken it near Sturry".

In the Folkestone and Dover areas of Division 8, Knaggs (*Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 80) said that it "may be met with not uncommonly at Raindean Wood"⁴; Webb (*Ent. mon. Mag.*, 24: 131) recorded it from Waldershare, 1880, and from near Alkham, 1882; and Webb (1891) gives Long Wood, 1889. In Division 16, between Folkestone and Ham Street, A. M. Morley (*in litt.*) recalls that Judge Luxmore told him he used to take *sinapis* in the park of Bilsington Priory, roughly about 1900.

H. G. Gomm (*Diary*) wrote that on July 17, 1915, he observed a single female *sinapis* in Sturry Woods (Div. 3); since when there has been no authentic record of its occurrence in the county.

[Kent, 1935 (Underhill, *Lond. Nat.*, 1935: 69), is unconfirmed (*teste* D. G. Underhill *in litt.*).]

FIRST RECORD, 1827: Darenth Wood (Stephens, *Haust.*, 1: 25).

¹In the preface to the *Zoologist* for 1862 at p. 22, Newman asked what had become of *sinapis* at Darenth Wood.

²The late T. L. Barnett told me that *sinapis* occurred at Spring Park, West Wickham, roughly about 1860 (C.H.).

³I could not find this series and doubt if it still exists (C.H.).

⁴"Woods near Uphill" (Ulyett, *Simpson's Handbook to Folkestone* (1871)) probably refers.

Colias hyale L.: Pale Clouded Yellow.

Immigrant; very irregular. Lucerne and clover fields, flowery meadows, etc.; on lucerne, red clover. Recorded from all divisions, but most frequent coastally, particularly in the north-east.

The species has probably appeared more often in Kent than anywhere else in Britain, and was more or less abundant in 1821, 1828, 1832, 1833, 1842, 1857, 1858, 1868,¹ 1872, 1875, 1892, 1900, 1901, 1921, 1945, 1947.

The insect arrives in May-June, but is then seldom noted in any numbers and usually as scattered individuals; generally, it is much more plentiful in early August to early September, and there is no doubt that in suitable years many of these second generation specimens have bred here from spring immigrants. In some years (e.g. in 1945 and 1947), there is a further generation that goes on through late September well into October. In 1946, A. M. Morley (*in litt.*) says that E. D. Bostock saw one in his garden in Folkestone on November 1.

Sabine (*Entomologist*, **35**: 115) records a male seen flying near Dartford, March 13, 1902, an extraordinarily early date; the same year, Golding (*Entomologist*, **36**: 72) observed "one freshly emerged specimen" near Maidstone on June 9; and in 1948, Owen (*Entomologist*, **81**: 169, 220) records finding imagines at Eynesford on May 23 and 30 "with wings still limp". The fact that each of these early records is for a year succeeding one in which the species was particularly numerous, lends some weight to the supposition that *hyale* occasionally survives the winter in this country.

I am not aware that the larva has been discovered here in the wild, but H. C. Huggins informs me that he has watched females in Kent in nature ovipositing on lucerne (*Medicago sativa*) and red clover (*Trifolium pratense*) (C.-H.).

An extremely rare if not unique instance of a natural union between this species and *C. croceus* is recorded by Goddard (*Entomologist*, **81**: 20), who states that he witnessed the capture of a ♂ *hyale* in cop. with *C. croceus* ab. *pallida* Tutt at Sheldwich near Faversham on September 6, 1947.

VARIATION.—The following aberrations are in R.C.K.: *intermedia* Tutt, several ♂♂ from Kent; *obsoleta* Tutt, ♂, Folkestone; *albescens* Metsch, ♂, Folkestone; *bipupillata* Cab., several ♂♂, Folkestone; *unimaculata* Tutt, Folkestone; *flavoradiata* Osth., ♂, Rochester, 1890; *trans. ad nigrofasciata* Gr.-Grsh., Willesborough, 1892; *flavofasciata* Lamb., several ♂♂, one ♀, from Kent; *trans. ad uhli* Kovats, several ♂♂, Folkestone; *flava* Huzz (*inversa* Alph.), ♂, Herne Bay, 1933, ♂, Canterbury. And the following underside aberrations: *radiiformis* Schultz, ♀, Broadstairs, 1900; *deannulata* Rocci, ♀, N. Kent; *rufa* Vty., Folkestone, bred 1911.

Frohawk (*Entomologist*, **34**: 352) records an albino ♂, taken Sheerness, September 1, 1901, which Goodson (*Ent. Gaz.*, **11** (1): 18) has recently named *albinotica*. Ab. *flava* Huzz is recorded by Brunsdon

(*Bull. Amat. ent. Soc.*, 1948, 7 (89): 150), and Lowe (*Entomologist*, 66: 257).

Curtis (1829, *Br. Entomology*, 242) records five specimens taken by Leplastrier near Dover, "one of which is a very dark and curious variety".

Barrett (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1900: 100) exhibited to show variation in size, a specimen alar expanse two inches and a quarter and another of one inch and a quarter; both captured in the same field at Margate, August 17, 1900.

In 1945, Morley noted a fairly large third brood at Folkestone in October, and among a number of normal specimens taken when the weather was quite cold were two males with undersides of a "greenish tint", one of which he exhibited (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 36).

Watkins (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1948-49: 49) records a gynandromorph bred from Kent parents. An example of homoeosis was taken by F. T. Vallins at St. Nicholas in 1947 (C.-H.).

FIRST RECORD, 1795: "In the Isle of Sheppey, and on a hilly pasture field near Ospringe in Kent" (Lewin, *Insects of Great Britain*, 70).

¹In which year, Cox (*Entomologist*, 4: 179) said that at Margate it could have been taken in thousands, but added that from lack of manpower "we were unsuccessful in capturing more than about eight hundred specimens." This may strike one as wanton destruction or gross acquisitiveness, but it must not be forgotten that at that time much collecting was done by postal exchange and this was a useful species for such a purpose.

***C. calida*¹ Vty. (*australis* Vty.): Berger's Clouded Yellow.**

Immigrant; much less frequent than *C. hyale*. Chalk downs and rough chalky places; flying over *Hippocrepis comosa*. Mainly recorded from the coastal area of Div. 8, also from 4, 9 and probably 6.

Some records for *hyale* may refer to *calida*, since not until recently were the two recognised as specifically distinct. Briefly, the principal points of difference in *calida* are: (1) The apex and termen of forewing more rounded; (2) black markings of both wings less extensive, especially the apical and submarginal markings; (3) discoidal of forewing large, of hindwing equally so and always deep orange; (4) ground-colour canary yellow in ♂, pure or even bluish-white in ♀; (5) larva very different; green, streaked with yellow and spotted with prominent black dots.²

The following is a chronological record of its occurrence in the county. 1875: Folkestone, S. Webb, Brit. Mus. (Berger, *Entomologist*, 81: 129), is the earliest British *calida* known. 1877: ♂, "Kent, Aug. 1877, Meek" (R.C.K.). 1892: Gravesend [Div. 6], four, Tutt, Tring Mus. (Cockayne, *Entomologist*, 81: 204). 1893: Folkestone, ♂, May, S. G. Hills (Berger, *loc. cit.*). 1896: ♂, "J. W. Tutt, Gravesend, 1896" (R.C.K.). 1900: Folkestone, ♂, August (R.C.K.); ♂, August, Hills (Berger, *loc. cit.*). 1901: 2 ♂♂, "Folkestone, 1901, H. Massey" (R.C.K.).

[1901: Folkestone, *hyale* seemingly confined "to the grassy hillsides on the downs . . . I did not see one in the clover and lucerne fields" (Freke, *Entomologist*, 34: 351), is certainly suggestive of *calida* (C.-H.).] 1911: Folkestone, one, Austin (Cockayne, *loc. cit.*). 1924:

♂, "Folkestone, Sept. 1924, L. W. Newman" (R.C.K.). 1933: Folkestone, two, September, ex E. D. Bostock coll. (K. W. Self). 1945: Folkestone, taken September 22, among *hyale* on downs to the north-west (A. M. Morley). 1947: Folkestone Warren—August 6, taken by J. Young (Morley, *Entomologist*, **82**: 71); four flying in from the sea on August 20, taken by C. Bartlett (Cockayne, *Entomologist*, **81**: 204);³ ♀, August 26; ♀ and 3 ♂♂, "beyond the Warren", August 30 (Richardson, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1948-49: 43; Morley, *loc. cit.*). ♀, "Folkestone, 1947, B. Kettlewell" (R.C.K.). 1948: Folkestone.—Middle Hill, one, May 19; Warren, eight, August 27, ♂, August 28, eight, August 30, six September 4 (Morley, *loc. cit.*; Palmer and Stoughton-Harris, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1948-49: 42); two ♀♀, taken on downs to the north-east, August 20, 28 (K. W. Self). Kingsgate (Div. 9), one flying in from sea, August 18 (Harbottle, *Ent. Gaz.*, **1** (3), 124; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1948-49: 34). Sandwich (Div. 4), ♂, June 24, Cockayne (R.C.K.). 1949: Dover-Folkestone area, July 26, small colony; August 12, numbers taken (Harbottle, *Ent. Gaz.*, **1**: 120-125). Folkestone area, October 8, ♀, ♂ taken (Dewick, *Entomologist*, **83**: 44; Morley, *Trans. Folkestone nat. Hist. Soc.*, 1949-50: 16).

VARIATION.—Berger (*Entomologist*, **81**: 129) states that the ground-colour of ♀ *calida* is occasionally yellow. This aberration has been once recorded from Kent by Morley (*Entomologist*, **82**: 71), who noted it in one of the two ♀♀ taken by Richardson, August, 1947.

FIRST (PUBLISHED) RECORD, 1948: Folkestone, 1875, S. Webb (Berger, *Entomologist*, **81**: 129). This is also the first British record.

¹For synonymy cf. Cockayne, *Ent. Rec.*, **64**: 166.

²For a full account of the differences in relation to *C. hyale*, habits, etc., cf. Berger, *Lambillionea*, **47**: 91; **48**: 12, 21, 90.

³Three of these are in R.C.K. A. L. Goodson tells me that in the Warren that day, Bartlett counted altogether about 40 flying in from the sea, all of which he considers were *calida*, but owing to a gale which was blowing at the time, was unable to take more than four of them (C.H.).

C. croceus L.: Clouded Yellow.

Immigrant, occurring almost every year (apparently absent in 1896-97). Clover and lucerne fields, waysides, banks, etc.; on lucerne, purple clover, white clover. Often fairly numerous coastally, particularly in the east and north-east. Recorded from every division, and in its years of greatest plenty, doubtless finding its way into every part of the county.

During the past hundred years or so, the butterfly was recorded as exceptionally plentiful in 1857, 1859, 1868, 1892, 1913, 1918, 1928, 1943, 1945, 1947, 1949;¹ and in 1877, the *annus mirabilis*, it produced three broods and continued into the second week of November. In that year, Tutt (*Br. Butts.*, 262) says that he once counted a dozen *croceus* on a single clover head, and added that altogether there were "probably some millions in the county of Kent". In 1878, Stephens (*Entomologist*, **12**: 58) records finding a fine specimen on ivy [in Kent] in mid-December, which exceptionally late date is even more remarkable considering that 1878 was an especially poor year for *croceus* generally.

I have no knowledge of the discovery of the feral larva in the county, but H. C. Huggins has observed females ovipositing in Kent in the

wild on lucerne (*Medicago sativa*), purple clover (*Trifolium pratense*), and white clover (*T. repens*); and D. F. Owen (*in litt.*) notes that empty pupa cases were found on lucerne at Shoreham in 1947 (C.-H.).

VARIATION.—The following aberrations are in R.C.K.: *velata* Rag., Kent, two; *faulle* Stef., ♂, Broadstairs; *magnipuncta* Lempke, ♀, Folkestone; *parvipuncta* Lempke, ♂, Forest Hill; *punctellata* Braun., ♂, Broadstairs; *internodimidiata* Rocci, ♀, Folkestone; *radiata* Nitsche, Chatham; *decurtata* Kitt, ♀, N. Kent; *semiobsoleta* Rocci, Kent, several; *pseudomas* Ckll., 2 ♀♀, Kent; *electra* Frck., ♀, bred, Sheerness; *aubuissoni* Carad., several, bred, Herne Bay; *nigra* Aign., Kent, two; *flavomaculata* Braun., 2 ♀♀, Folkestone; *chrysothemiformis* Vty., ♂, Margate.

Ab. helice Hubn. has been frequently recorded from Kent and appears to be not uncommon in those years when the species is abundant. In 1947, D. F. Owen noted that within seven miles of Chislehurst, 740 *croceus* counted included 50 *helice* (de Worms, *Lond. Nat.*, 1949: 77). At Cobham in 1950, 23 ♀♀ noted included seven *helice* (Frazer, *Entomologist*, 84: 28). A. M. Morley (*in litt.*) writes that in 1928 at Aldington and near Lympe (both in Div. 16), he estimates the number of *croceus* seen at about 300 and of *helice* at 40; in 1947, in the Folkestone district, he saw 603 *croceus* of which 45 were *helice*, in September in the Alkham Valley (Div. 8) 27 *croceus* including one *helice*; and in 1949, at Dover Hill, on August 21, 45 *croceus* were seen but no *helice*. Note: There is a useful account by Goodson (*in Ent. Rec.*, 63: 47) dealing with the confusion regarding the synonymy of *helice* Hubn., wherein it is stated that Hubner's name *helice* (= *pallida* Tutt) is restricted to the form of the ♀ with creamy-white ground colour. It may be wondered therefore what percentage of those that have been referred to as *helice* were in fact this, and what proportion of them may not have been referable to *ab. helicina* Ob. (ground colour pale yellow); *ab. alba* Lempke (ground colour dead white, with no trace of creaminess); *ab. albissima* Ragusa (specimens of the *helice* form which show a white discoidal spot on underside of hindwing instead of orange), or, to *aubuissoni* Caradja (ground colour between that of *helice* and typical *croceus*).

Sabine (*Entomologist*, 25: 279) records several curious abs. taken in the Erith district in 1892; Morley (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 36) exhibited *ab. helicina* Ob.; Oliver (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1935-36: 45) exhibited a number of pale abs. originating from a Folkestone "*pallida* form"; and various other aberrations are recorded by Walker (*Ent. mon. Mag.*, 50: 15); Frohawk (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1939-40: 30); Andrews (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1940-41: 23); Newman (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1941-42 (2): 26); Woodward (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1957: 44).

Warrier (*Ent. Rec.*, 63: 198) records *ab. cinerascens* Rowland-Brown, bred from West Wickham, and gives genetical details; a ♂ from Bekesbourne taken by Hirst (*Entomologist*, 4: 160) appears to be referable to this form which is characterised as having the normal black markings replaced by a delicate grey.

Taylor (*Qtly. J. Folkestone nat. Hist. Soc.*, 1869, (3): 71) records a ♀, alar expanse 1" 9 lines; and Cox (*Ent. week, Int.*, 6: 188) one

with alar expanse only 1". Such dwarf examples may be referable to *pyrenaica* Gr.-Grsh.

In the Brit. Mus. is a ♂ labelled as *chrysothemiformis* Vty.: "Folkestone, W. J. Austin, 1879".

Bobe (*Ent. Rec.*, **60**: 92, plt. 5; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1949-50: 21) exhibited a striking ♂ ab. taken at Butlon Street, August 28, 1947, with a wide black stripe stretching from the median spot of the forewings to the marginal band; this is *nigrofasciata* Vty.

FIRST RECORD, 1793: "Seen this season in Kent in greater plenty than for several years" (Donovan, *Nat. History Brit. Ins.*, **2**: 17).

¹A. M. Morley (*in litt.*) observes that in the Folkestone area, "the good years, 1928 and 1945-47, were largely due to the fact that we had each time a large lucerne field which was kept to seed, it was not cut, and the farmer did not object to our presence. In recent years the lucerne has been cut so frequently that *Colias* has hardly a chance"

***Gonepteryx rhamni* L.: Brimstone.**

Native. Woods, commons, bushy places, hedges; on *Rhamnus cathartica* (particularly on chalk), *Frangula alnus*, also rarely on *R. alaternus*, and possibly *Cornus sanguinea* and birch. Recorded from all divisions except 15, but is apparently nowhere very plentiful; the insect tends to wander far from its breeding grounds and is almost certainly casual in 4, 9, and probably 2.

In Div. 4, D. F. Harle (*in litt.*, 1960) writes that at Sandwich it is "regular in small numbers through my garden in early spring but is not frequently seen"; and A. M. Morley notes that he saw one near Ebbsfleet, April 17, 1940. In Div. 2 I have seen it near Higham, flying rapidly in a fixed direction over salt marshes (C.-H., *Ent. Rec.*, **72**: 72) and Burton (*Lond. Nat.*, 1954: 59) observes that in the north-west Kent marshes "strays are sometimes encountered on the open marsh", and that "it is most frequent east of Erith, but is never really common". Elsewhere in 2, H. C. Huggins gives Gravesend, and B. K. West has observed it at Dartford. The only records for Div. 9 are:—Dent de Lion, two, March 12, 1922; Margate, September 6, 1926, September 1, 1928 (Gomm, *Diary*); Birchington, ♂ at 'red valerian', in my garden, August 1929; Westgate, ♂ in clover field c. 1931 (C.-H.); Thanet, "only about ten seen in 40 years, including two in St. Peters a few years ago" (J. W. C. Hunt, *verbatim*, March 1951).

Obs.—Weir (*Proc. ent. Soc. Lond.*, 1872: 25) stated that having planted a variegated form of *Rhamnus alaternus* in his garden at Blackheath, it was at once discovered by the butterfly which deposited thereon, adding moreover that he had not (until then) observed the species in his garden for sixteen years. Alderson (*in Wool. Surv.* (1909)) gives "Common at Farnborough, larvae feed on dog-wood"; and on May 6, 1960, Dr. E. Scott (*in litt.*) witnessed an ovum deposited upon a birch leaf in Hoads Wood (div. 11).

K. W. Self (*in litt.*) says that at Folkestone although it is "a relatively scarce insect here, at least 25 were seen by me during August 1958, which suggests immigration".

Walker (*Ent. Rec.*, **10**: 102) records having seen *rhamni* on the wing as early as January 20.

VARIATION.—In R.C.K. are the following aberrations:—*fervida* Frtsh., N. Kent, several ♀♀, ♂♂; *intermedia* Tutt, ♀, N. Kent, 1930; *cleodoxa* Rebel, ♀, ♂, N. Kent.

Bicknell (*Proc. ent. Soc. Lond.*, 1871: 18) exhibited a ♂ taken, Blackheath, March 1870, in which the forewings and right hindwing were "broadly but unequally suffused with bright rose-colour or scarlet"; Youens (*Ent. Rec.*, 2: 36) records one taken, Darenth Wood, 1889, with the wings partly "suffused with a reddish-orange colour", and which was mistaken when flying for *A. cardamines*; and in Goodwin coll. is a ♀ underside symmetrically splashed with purple-brown, N. Kent, bred 1908, Purefoy (C.-H.).

Gynandromorphs are recorded by Frohawk (*Entomologist*, 34: 352); Williams (*Proc. S. Lond. ent. nat. Hist Soc.*, 1939-40: 27); Woodward (*Proc. S. Lond. ent. nat. Hist Soc.*, 1957: 44); and in R.C.K. are three mixed gynandromorphs: Sheerness, 1901; N. Kent, 1918, 1930.

FIRST RECORD, 1811: Gravesend District, September 5, 1811, "caught this day at noon a brimstone butterfly" (Arnold, *Robert Pocock*, 38).

[*G. cleopatra* L.]

Suspected escape.

13. Tunbridge Wells, ♂ and ♀ taken in a clover field near here by Mr. Parsons (Beeching, *Ent. Rec.*, 1: 288). "L. M. Griffin reported a ♀ taken near Tunbridge Wells and identified by an expert" (Knipe (1916))¹.

Note: E. B. Purefoy maintained it for 14 years in his garden at East Farleigh (div. 11) (Purefoy, *Ent. Rec.*, 32: 227; Frohawk, *Entomologist*, 73: 69).]

¹"No doubt one of mine escaped and found its way there" (E. B. Purefoy, *in litt.*).

DANAIDAE

***Danaus plexippus* L. (menippe Hübn.): Milkweed.**

Vagrant?

Five (possibly six) examples. The double occurrence in 1881 is curious considering there were no records for the rest of the British Isles that year.

1881: Dover, ♂ taken by Arthur Cook, July 20 (Williams, *Entomologist*, 76: 1); Snodland, near Maidstone (div. 2), ♂ taken by F. J. Hawes, "flying heavily over a meadow", September 21 (Weir, *Entomologist*, 19: 12). 1934: Ringwould (div. 8), one seen by H. C. Gunton, "flying over low bushes", July 15 (Dannreuther, *The Times*, August 1, 1934). [1949: West Wickham (div. 1), one reported as seen on a local golf course by two boys (Owen, *Ent. Gaz.*, 2 (1), 75).] 1950: West Wickham, one seen settled on buddleia, August 22 (Owen, *loc. cit.*). 1952: Tyler Hill (div. 3), one seen settled on the ground in a hopfield by Mrs. M. Coomber, September 12 (Atkinson, *Ent. Rec.*, 64: 322).

FIRST SEEN, 1881: Dover (Williams, *loc. cit.*).

SATYRIDAE¹**Pararge megera** L.: Wall.

Resident, perhaps native. Downs, commons, heaths, lanesides, rough grassy places, etc.; [on *Dactylis glomerata*]. Present in all divisions. Fairly numerous, particularly inland on the chalk.

The species has been subject to considerable change of distribution owing to periods of widespread extension and contraction of range. During its known history, the records indicate that it was rather well distributed and plentiful up to about 1900. Subsequently it decreased, becoming rare or even absent in a number of areas, but during the 1930's underwent a major revival, and at the present time is fairly generally distributed throughout the county.

The butterfly is normally double brooded, appearing about the middle of May, continuing well into June, and reappearing in August. Sometimes a partial third generation is produced in late September and October, as was the case for example in 1893, 1933, 1943, and 1947-50. In 1957, it was first noticed on April 23 (C.-H., *Ent. Rec.*, **69**: 196), and in 1947 it was seen as late as October 26 (Owen, *Lond. Nat.*, 1952: 27).

I have no definite knowledge concerning its foodplant(s) in the county. Morgan (*Lepidoptera of Tunbridge Wells* MS.), however, gives Cock's-foot Grass (*D. glomerata*) as the natural larval pabulum, but possibly this refers to Sussex.

1827-1899.—For much of Kent there is a marked absence of information concerning the distribution of *megera* during the early part of its history. Thus, we have no definite knowledge of 19th century occurrence in any of the following divisions: 4-5, 9-11, 13-16. There are however a number of indications that the species was much more generally distributed during this time than the records show.

Stephens, who resided at Eltham (div. 1), did not mention Kent in particular when referring to *megera*, but summed up its distribution generally (in 1827) as "abundant everywhere in woods, lanes and waysides" (*Haust.*, **1**: 55). Four years later there appeared the first positive reference to Kent: it was recorded from the Dover vicinity by Bree (*Mag. Nat. Hist.*, **5**: 335), but no details were included.

In div. 1, Beddell (*Zoologist*, 735) has Charlton Sandpit, 1844; it was noted as common on Dartford Heath in 1873 (R. Adkin in *Wool. Surv.*), and 1876 (Fenn, *Diary*), and was stated to have occurred c. 1882 at Sydenham (Sellon, *Ent. Rec.*, **2**: 163). Towards the end of the century it appears to have decreased considerably in this area. Fenn (in Buckle and Prout, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1898: 55) observed it as "scarce, formerly common"; and (in *Ent. Rec.*, **6**: 229) remarked that "it seems to have quite disappeared from the Lee, Eltham, and Bexley district".

In N. Kent, Fenn (*Diary*) noted three at Greenhithe (div. 6a), May 19, 1859, and observed it in fair numbers on his visits to Chattenden (div. 6a) in 1884, 1887, 1889, 1894. Kipping (*Entomologist*, **25**: 209) recorded it as "exceedingly abundant" at Chattenden, August 1892, but in May 1893 Tutt stated that in "the woods in north Kent" [Chattenden], he had rarely known it to be so rare, although he mentioned it as being frequent at Cuxton* (div. 6) on July 22 the same year (*Ent. Rec.*, **4**: 229, 275). For the Rochester and Chatham

areas generally, Chaney (1884-87) has: "abundant in lanes and waste places"; Tyrer (*Ent. Rec.*, 2: 232) records it for 1891; and Walker (*Ent. Rec.*, 10: 100-103) gives it as "generally distributed and common most years". On the Isle of Sheppey, Walker noted a ♂, Royal Oak, May 1868 (Walker MS); and in 1893, recorded it as plentiful (*Ent. mon. Mag.*, 29: 211), adding that in the very fine and warm autumn a partial third brood appeared at Sheerness in October (*ibid.*, 34: 278). For div. 7, there are single specimens in Chitty coll. from Doddington, August 1895 and May 1900 (Hope Dept.).

In the Canterbury district, Fenn (*Diary*) noticed it at Blean [Thorneden Wood] (div. 3), July 30, 1865, and May 17, 1866; there is a specimen labelled "Blean Woods, 28.5.76, F.G.W[hittle]" (in Brit. Mus.); and one was seen at Cockering Wood (div. 8), May 1894 (S. Wachter MS.).

The only mid-Kent record for this period, to our knowledge, is for Bowley Mill, near Charing (div. 12), August 1899 (Blenkarn, *Entomologist*, 32: 278).

In the Folkestone and Dover area, several were recorded by Beale (*Ent. week. Int.*, 2: 92) from Alkham, June 1857; Knaggs (*Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 80) has "Common in lanes inland"; Hall (*Ent. mon. Mag.*, 24: 77) records it as "local, lanes inland, common—more abundant than *aegeria*", and Carpenter (*Ent. Rec.*, 1: 207) recorded it, Folkestone, 1890. To the north-east, Fenn (*Diary*) observed the butterfly at Kingsdown, August 1867, and Deal, 1884; and Kidner (*Diary*) has: "A few specimens seen at Deal, August 1899".

1900-c.1940.—The species appears to have been very scarce or absent over a wide area during this period, especially from about 1905-1930, but to have persisted in some places, particularly on chalk downs inland.

In N. W. Kent, the butterfly was stated to be "rather local, by roadsides", and "rare at Bromley and Farnborough" (*Wool. Surv.* (1909)); Kidner (*Diary*), in a note on the Lepidoptera of West Wickham, 1893-1909, wrote: "Only once noticed—August 1903". Sankey (*Ent. mon. Mag.*, 87: 146) records one, Farnborough, 1918; and it was seen on a railway bank at Bexley, 1920 (Newman, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1920-21: 61). I remember the late W. A. Cope telling me about 1947 that *megea* was formerly practically absent in the Bromley district, moreover Kidner, who resided at Sidcup (div. 1) from 1909-39 and who meticulously recorded his observations during the whole of this period, does not appear to have seen it at all in W. Kent except on the one occasion in 1903 referred to above; the species is not included by Juby and Hards (1925), and I have no record of its occurrence in div. 1 between 1920 and 1942 (C.-H.).

In N. Kent, H. C. Huggins (*in litt.*) says: "Common everywhere in the Gravesend area 1899-1903 (Gravesend and Cliffe (div. 2), Cuxton and Snodland (div. 6)), then increasingly rare until 1907, except in the chalk areas of Cuxton and Snodland; after that, apparently extinct in Gravesend area (Gravesend, Cliffe to Swancombe), and scarce on the chalk until 1932, when I left Kent". It was recorded from Eynsford (div. 6) in 1928 (*Lond. Nat.*, 1928: 73), and 1929 (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1939-40: 40). In div. 7, H. C. Huggins (*in litt.*) says it was present in small numbers annually on the chalk about Faversham and Belmont, 1913-15, 1923-27, and about Sitting-

bourne, Hollingbourne and Stockbury, 1915-22. At Westwell, it was noted by Bull (*Diary*) in 1932-33. On Sheppey (div. 2), Fletcher (*Entomologist*, **34**: 371-2) noted a few, August 11, 1900; but Betts (*Entomologist*, **53**: 67) specifically states that he failed to see it there in 1919.

In N.E. Kent the butterfly was either absent or local and very scarce. Thus, in div. 3, J. Shepherd, who assiduously worked the Herne Bay area, only observed two specimens there between 1911 and c. 1943; at Reculver, however, S. Morris (*Diary*) saw a few around the ruins of the old church, September 2, 1938, and one at Hoads Wood, Sturry, May 1940. At Broad Oak, between 1934-40, I only saw about four, mostly after 1937; but in May 1940, encountered a small colony on some clay slopes towards St. Stephens, Canterbury (C.-H.). For div. 9, there are two specimens labelled: "Margate, 1906, J. P. Barrett" (J. P. Barrett coll.); Gomme (*Diary*, 1914-33) does not mention it for Thanet; H. C. Huggins (*in litt.*) says it was scarce between Margate and Broadstairs, 1928-31; and between 1925 and 1934 I only saw it once as a casual in my garden at Birchington in 1932 (C.-H.).

In the Weald it appears to have been generally uncommon. Prideaux (*Entomologist*, **82**: 166; **83**: 69) records it as rare at Brasted (div. 10) between 1905 and c. 1943. In the Tunbridge Wells area (div. 13), Morgan (*in Knipe* (1916)) wrote: "I feel sure I have seen the insect several times in this district years ago", and added that it had been seen "more or less plentifully" by A. D. Reed, and that one was captured in 1915; thirty years after, Morgan (*in Given* (1946)) confirmed its scarcity here by remarking that until lately "it had been so long nearly absent from our neighbourhood". A single ♀ was taken by me near Tunbridge Wells, August 1938 (C.-H.); one, Tonbridge, June 1941 (A. M. Morley). Further east, Bull (*Diary*, 1923-43) noted it singly at Newenden (div. 14) in 1927 and 1928; severally in the Sandhurst area (Sandhurst, Newenden, Knock Wood, Woodchurch, Benenden (div. 14); Bedgebury (div. 11); Ham Street (div. 12)) in 1930, becoming increasingly numerous until 1933, but thereafter less plentiful annually 1934-40. In the Ashford neighbourhood, E. Scott (*in litt.*) recollects that it was rather uncommon in the 1920's but increased in the 1930's. A few were noticed at Ham Street 1929-30 (A. M. Morley).

In E. Kent it was mainly confined to the chalk of div. 8, and there is little doubt that the species persisted here locally in a number of places throughout this period, the strength of its colonies varying according to the type of season. Thus, it was seen, sometimes year after year, in suitable places about Folkestone and Dover, and at Bossingham, Chilham, Crundale, Wye, Stowting, Beachborough, West Wood, Elham Park Wood, Alkham and Elmstead. For div. 16, where it may have been casual, at least for part of this period, the only records I have are those of Bull (*Diary*) who saw it at Lympne in 1933 and 1934.

c. 1940-1960.—Early in the 1940's, the butterfly began to appear in numbers in various parts of the county whence it had been previously rare or absent. In div. 1, it was seen at Marlings Wood, Chislehurst, August 18, 1942 (S. F. Blyth), the first record to my knowledge for this division since 1920. At Brasted (div. 10), Prideaux (*loc. cit.*) says that c. 1943, after being very scarce for many years, it suddenly in-

creased, and by 1945 was abundant everywhere; and Morgan (in Given (1946)) said much the same thing with regard to the Tunbridge Wells area (div. 13). Bull (*Diary*) noted it severally about Sandhurst in 1941, but in 1942 his records show it to have been markedly more frequent that year and subsequently. In N.E. Kent several were noticed in 1942 at Northdown and Lower Hale (both in div. 9), Seven-score Marshes (div. 4) (W. D. Bowden); also at Broadstairs (div. 9) (J. W. C. Hunt). Further west in div. 3, J. Shepherd told me that it appeared in some numbers at Herne Bay c. 1943 and by 1949 was common; it was also noted by me not uncommonly on the edge of Blean Woods in 1944 (C.-H.).

By 1950, *megea* had become fairly numerous and well distributed throughout Kent, and on the chalk downs of divisions 5, 6, 7 and 8—abundant. In certain districts, however, it still appears to be uncommon, notably in 9, 16 (Folkestone) and the area adjacent to the metropolis. In 15, for which there is no record prior to 1945, though it has probably occurred there in the past, several were noticed on August 5 that year at St. Mary's Bay, also at Lydd, August 5, 1954 (A. M. Morley); one seen, Hope and Anchor, 1957 (E. Philp), and it was noticed by me in numbers at the extreme edge of Romney Marsh by the canal near Kenardington, May 24, 1953, as well as severally at Greatstone, August 26, 1958 (C.-H.).

VARIATION.—In R.C.K. are the following aberrations: *elongata* Lempke, Folkestone, ♀, 1935; *mediolugens* Fuchs, Chattenden, ♀, 1861 (probably the one exhibited by Frohawk, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1891: 132).

Webb (*Entomologist*, 22: 289) records a remarkable ♂ taken by Captain Cox, probably at Fordwich; it is a peroneural defect and is in R.C.K.

A ♂ ab. *lugens* Ob.† was taken by J. W. C. Hunt, Broadstairs, May 1944 (C.-H.).

Adkin (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1905-06: 97) exhibited one referable to *impupillata* Lempke, i.e. without the white spot on f.w. ocellus.

Specimens with much reduced f.w. ocellus but still showing the white spot occur not infrequently and are referable to ab. *parviocellata* Lempke (C.-H.).

One seen by B. C. S. Warren on the Downs at Folkestone and which was missed was described by him as "butter coloured" (A. M. Morley).

Dwarf examples occasionally occur; I have a ♀ taken 1938 al. expanse 36 mm., and Worthington-Stuart (*Entomologist*, 78: 158) records one "no bigger than a Small Heath" (C.-H.).

FIRST RECORD, 1831: Dover vicinity (Bree, *Mag. Nat. Hist.*, 5: 335).

¹For an account of the ecology and distribution of the Satyridae in W. Kent, cf. Owen, *Lond. Nat.*, 1952: 13-44.

P. aegeria L. ssp. **egerides** Stgr.: Speckled Wood.

Resident, perhaps native. Woods, copses, shady lanes; foodplant unknown. Generally fairly plentiful in the west and in the Weald, becoming less so in east and north-east Kent.

The changes in the distribution of this butterfly in Kent, especi-

ally during the present century, are most remarkable (for a discussion and account of the history of *aegeria* in Kent, cf. Chalmers-Hunt and Owen, *Entomologist*, **85**: 145-154), and may be compared with those of *P. megera*. Both species reached their lowest levels in Kent between 1915 and 1940, but whereas *megera* persisted in suitable places during this period, *aegeria* contracted to the point of virtual extinction.

Early History.—Like so many other species, it is extremely difficult to gain anything approaching a complete picture of the former distribution of this butterfly in Kent. The earliest mention would seem to be that of Bree (*Mag. Nat. Hist.*, **5**: 335), who lists it as having been observed by him in the vicinity of Dover, presumably in August and/or September 1831. Buckstone (*Entomologist*, **82**: 237) states that, in 1892, Boden told him that he remembered as a boy (c. 1835) he knew of a number of Kentish woods wherein it occurred but it was becoming less numerous even then, and he thought it had become extinct in the county. Both Harris (1840, *Aurelian*, edit. Westwood) and Humphreys and Westwood (1841, *British Butterflies and their Transformations*) give Dover, though possibly their information was based upon Bree's record cited above.

The next source of information is that of Beale (*Diary*), who noted four specimens at Knock Wood (div. 14) c. 1855. Allchin (*Ent. week. Int.*, **7**: 187) has:—"Took about thirty in Kent [Chattenden] in May and July (1859); less common than usual"; Lewcock (*Ent. week. Int.*, **8**: 75) records one in 1860, presumably for the Chatham district; and in 1869 a number were seen at Chattenden Roughs during June and July (Walker, MS.). In East Kent, Fenn (*Diary*) wrote that he saw a "much battered specimen" the Herne side of Blean Woods (div. 3), May 16, 1866; and in the Folkestone district, Knaggs (*Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 80) states that it is "common inland, borders of woods".

Reports from now on are more frequent, and as these often include remarks referring to the steady decrease in the county, they are best dealt with under the following heading.

The Disappearance, 1875-1913.—Reid (*S. East. Nat.*, 1904: 49) writes: "Two specimens in the Maidstone Museum were taken at Boxley (div. 7) about 1875, where in a very restricted locality the species formerly occurred but is no longer to be found".

At Dover it was local but common about lanes inland (Hall, *Ent. mon. Mag.*, **24**: 77), and was recorded at Folkestone by Hall (*Entomologist*, **15**: 257), and by Ulyett (1880).

In 1880 it was reported as plentiful at Higham (Porritt, *Entomologist*, **13**: 163), and in the Rochester district (Chaney (1884-87)); and Fenn (*Diary*) wrote that it was more or less common on his visits to Chattenden in 1884-86, 1888-89.

In 1887, one was seen at Shoreham (div. 6) (Fenn, *Diary*); and in the Weald, W. A. Cope told me he saw it not plentifully in 1881-82 on the Tenterden road at Cranbrook (C.-H.). These constitute all available records for the 1880's.

In 1892, a few were reported from the Sevenoaks district (Buckstone, *Entomologist*, **82**: 237); but to the north-west, Fenn (*Ent. Rec.*, **6**: 229) writing on the gradual disappearance of Lepidoptera from

S.E. London (1895), says that *aegeria* was no longer present in the districts of Lee, Eltham and Bexley. In East Kent, E. & Y. (1949) state that the butterfly was formerly found at Bushy Ruff, River (div. 8), c. 1895.

In 1893, there appeared a series of observations by Tutt (*Ent. Rec.*, 4: 150-151, 228-232, 249-252). From the context it is believed that most of these records refer to the Chattenden area, and on each occasion *aegeria* is discussed as being abundant. It was also noted as more or less common at Chattenden in 1890-91, 1893 (Fenn, *Diary*); and was recorded as generally distributed and common in the Chatham district (Walker, *Ent. Rec.*, 10: 100-103).

By the turn of the century the disappearance of *aegeria* from many of its old localities in the county was being chronicled in the entomological journals of the time. Stockwell (*Entomologist*, 34: 26-27) writing of the Dover vicinity, states: "On April 21, 1900, I took one specimen where in previous years I have taken it in plenty;"¹ and Webb (*S. East. Nat.*, 1903: 54) reports a similar decrease for this area. Elsewhere in East Kent,² it was still present at Folkestone up to August 1900 according to Pickett (*Proc. Cy. Lond. ent. nat. Hist. Soc.*, 1901: 35).

In 1908 it was recorded from Shoreham (Barrett, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1916-17: 96); V.C.H. (1908) has: "Generally distributed in woods and lanes throughout the county, but according to Captain Savile Reid and Mr. Goodwin is gradually disappearing";³ and in Wool. Surv. (1909) the following N.W. Kent localities are mentioned: Shooters Hill, formerly (West, *Ent. Rec.*, 18: 142), Orpington (C. Fenn), Farnborough, scarce, and Chelsfield (W. Barnes).

In its former strongholds at Chattenden, the butterfly had evidently decreased very considerably by the turn of the century, for Huggins (*Entomologist*, 85: 214) states that he never saw nor heard of it being taken there from 1900-09, despite frequent visits.⁴ On August 13, 1913, however, a "stray example" was taken at Chattenden by Barrett (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1916-17: 97), which specimen appears to have been the last to have been seen in the county for many years.

The disappearance of *aegeria* from Kent coincided with a general decrease throughout its range in this country. Reports indicate moreover that it was on the decline during the whole of this period, and in the counties of Herts., Suffolk and Norfolk it likewise became extinct or nearly so.

1913-1942.—Between the years 1913 and 1942, *aegeria* was apparently absent from Kent, apart from a remarkable record by L. T. Ford (*in litt.*), who saw several in Joydens Wood, Bexley (div. 1), about 1925. It is improbable that these were the remnants of an original colony or early arrivals of the present population, and the simplest and most plausible explanation is that they had in some way been released.

The Reappearance, 1942-1951.—It would appear that in Britain generally, the return of *aegeria* to many old and some new haunts began slowly some time after 1920, but it was not until 1942⁵ that the first new Kentish records came to hand.

The first reference to reappearance is that of Batchelor (*Entomologist*, **83**: 94), who in 1942 noted it at Trenley Park, Littlebourne (div. 3), and subsequent observations to 1946 inclusive showed an annual increase. In 1943 it was also seen at Sandwich (div. 4) and here again it showed an increase in subsequent years. Batchelor left the district in 1947, but noted it again at Sandwich in 1948 and 1951-52, and mentions two seen at Preston (div. 4) in 1952. D. F. Harle (*in litt.*, 1960) writes that a colony was noticed at Pine Wood, Littlebourne, up to 1950, but that the locality had not been visited for *aegeria* since.

In 1945, three widely scattered specimens were seen in East Kent. The first in May at Folkestone (div. 8) (D. Smith *teste* A. M. Morley), followed by one in July in woods between Ham Street and Horton Green (div. 12) (Woodcock, *vide* Frazer, *Entomologist*, **84**: 90), and another in August or September at Dumpton Gap, Broadstairs (div. 9) (W. D. Bowden). The first West Kent record is of one taken at Horton Kirby (div. 6), June 6, 1945 (G. Law).

The next year, 1946, produced more W. Kent records, the butterflies having presumably penetrated from Surrey. It was seen at Bromley (Jarvis, *Entomologist*, **82**: 188); Otford (K. H. Bobe) and Farnborough (W. A. Cope). In East Kent it occurred at Whitehill Wood, Bridge (div. 8) (J. Jackson).

In 1947, W. Kent records were more numerous and in some localities the butterfly was plentiful. It was noted at Sevenoaks (div. 10), Shoreham (div. 6), Holwood Park, Joydens Wood, and Hayes (div. 1), Biggin Hill (div. 5), also at Hawkhurst (div. 14) in the Weald. In E. Kent it was observed at Rhode Common (div. 3), Larkey Valley Wood near Canterbury (div. 8) and at Lympe (div. 16).

By 1948, colonies were thriving in W. Kent, and the following additional localities were noted: Ide Hill and Westerham (div. 10), Langton Green (div. 13), Eynsford and Kemsing (div. 6), Petts Wood and West Wickham (div. 1); also further east at Burham (div. 7).

During 1949-51, most correspondents refer to an increase in the areas listed above. Additional records for this period are for Edenbridge, Mereworth Woods, and Hoads Wood (div. 11), Brasted Chart (div. 10), Chattenden and Darenth Wood (div. 6a), Cudham and Chelsfield (div. 5), Orpington and Farningham (div. 1), Sandhurst and Knock Wood (div. 14), Ham Street (div. 12), Cobham and Fawkham (div. 6), Wye (div. 8), Pembury, Speldhurst, Iden Green and Frith Wood (div. 13) (Chalmers-Hunt and Owen, *loc. cit.*).

Present Status, 1952-1960.—The records for 1952-60 show that the butterfly has become fairly generally distributed, and is now present in suitable places throughout Kent west of the Medway, in the Weald, and in Mid. Kent as far north as the downs of div. 7. In certain localities it is particularly numerous, as for example along woodland paths at Darenth, as well as in similar situations at High Halstow on the Hoo Peninsular, where on June 5, 1959, a score or so of fresh ♂♂ were noticed in about an hour (C.-H.).

In the extreme north-west, i.e. the area bordering the metropolis, the butterfly has only occurred casually; single examples having been seen at Plumstead in 1952 (Showler, *Ent. Rec.*, **68**: 126) and at Blackheath in 1955 (Allen, *Ent. mon. Mag.*, **93**: 31).

It seems to be still absent from much of div. 7. In 1953, the insect was noted for the first time at Boxley (A. H. Harbottle); also at Westwell (E. Scott), but has since been observed repeatedly at this locality. To the north-east in div. 3, I have no knowledge of its status at Rhode Common since it was first noticed there in 1947, and am not aware that it has been seen in any part of Blean Woods.

The butterfly was found regularly in small numbers at Hoads Wood (div. 11) (P. Cue); also at Ham Street (div. 12) (E. Scott), where it appears to have increased noticeably of late, being fairly plentiful along the borders and in the rides of Long Rope and Birchett Woods in April 1960 (C.-H.). Elsewhere in div. 11, *aegeria* has been observed in small numbers at Frittenden, 1955 (C.-H.), Park Wood, Pluckley, 1956 (E. Scott) and at Tonbridge, 1958 (W. G. Breed).

The species is only occasionally seen east of the Stour: Wye (div. 8), again noted 1953-54 where it was first seen in 1949 (W. L. Rudland); Folkestone (div. 8), two, 1955, two in the Warren, 1960, one Reinden Wood, 1960, all by T. Fawthrop; two, September 1957, by K. W. Self (A. M. Morley); Smeeth (div. 12), c. 1953 (B. C. S. Warren, *vide* E. Scott); West Hythe (div. 16), four 1952 (Cheeseman, *Ent. Rec.*, 64: 289), three ♂♂, June 12, 1959 (A. M. Morley). There have been no reports of its occurrence at Sandwich since 1952, nor from Littlebourne since 1950.

VARIATION.—Kentish specimens conform to ssp. *egerides* Stgr., the Central and North European race, with pale spots and underside of hindwing olive-green variegated with brown.

Pickett (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1906-07: 88) records a "very light form" from Dover.

FIRST RECORD, 1831: Dover vicinity (Bree, *Mag. Nat. Hist.*, 5: 335).

¹One "Dover, 1896", five "Dover, 1898" (Stockwell coll.). Kearsney, two, July 1899, one, April 21, 1900 (H. D. Stockwell *per* G. H. Youden *in litt.*).

²Three in Goodwin coll. are labelled: "East Kent, 1907, T. Blest". I asked Blest if he could recall the locality but he was unable to do so after such an elapse of time (C.-H.).

³It had already in fact almost disappeared by 1908.

⁴Reid's statement (*S.E. Nat.* 1904: 49) that "it is still common, I believe, in the Chattenden Woods" wants confirmation.

⁵Robbins (*Lond. Nat.* 1938: 44) records that it was seen in 1938 at Limpsfield, Surrey, which is only a mile or two from the county boundary of div. 10.

***Eumenis semele* L.: Grayling.**

Native. Chalk downs and rough chalky fields, dry open woodland, heaths, sandy places, gravel banks, etc.; foodplant unknown. Locally plentiful in 6 and 7-8 (only present in the extreme west of 7 and absent from much of the western portion of 8), status uncertain in 5, doubtful if permanently resident elsewhere.

The habitats of this species in Kent are normally chalk downs and rough uncultivated fields on chalk. About 1945, however, it was found to occur in a variety of new terrain (in 1, 2, 4, 6a and 16), having presumably extended its range thereto; and there is evidence that it survived for a number of years at some of these places.

1. Sydenham (Rennie, *Conspectus*, 12). Lewisham, one, 1871 (R. Adkin, in *Wool. Surv.*). Chelsfield (Hewitt, in *Wool. Surv.*). Keston

Common, one 1945 (F. R. Browning). Hayes Common, 1946, "extremely abundant especially on flat, stony heather-clad stretches"; "J. E. Owen estimated about 500 in one small area, July 25, 1948"; ♂♂ emerging, July 5, 1952 (D. F. Owen); the locality is a heath roughly 100 yards square:—15, including several ♀♀, July 13, 1952; fairly numerous, August 21, 1955; one ♀ only, August 6, 1957; none seen 1958-60 and presumed extinct (C.-H.). Blackheath,¹ ♂ August 26, 1947; Sundridge Park and Elmstead Wood,² several, 1947 (J. F. Burton). St. Paul's Wood, "a flourishing colony," 1947-48; Joydens Wood, in fields bordering, a few, August 17, 1947; several, July 30, 1951 (Owen, *Lond. Nat.*, 1952: 29-31). West Wickham, stray ♀, settled on horse chestnut trunk, August 6, 1949 (C.-H.). Abbey Wood, one, 1951 (Rigden, *vide* Showler, *Ent. Rec.*, 68: 126). Dartford Heath, fairly plentiful, July 20, 1946 (D. F. Owen), numerous, July 27, 1948 (J. F. Burton), common, 1949, 1953 (A. S. Wheeler), very common, even straying into nearby gardens and visiting buddleia, still present in numbers in 1957, two ♀♀ noticed August 26, 1960 (B. K. West). Sparrow Wood, July 17, 1949, a few 1951 (A. M. and F. S. Swain), none, 1960 (F. S. Swain). Farningham Woods, abundant, July 20, 1952 (A. H. Heselden).

2. Cliffe, one on saltmarsh, August 29, 1948; Higham, small colony on saltmarsh, August 7, 1949 (Owen, *Lond. Nat.*, 1952: 31), six, on sea-wall, 1953 (Owen, *Ent. Rec.*, 65: 279).

3. Old Park, Canterbury, one, c. 1939 (J. A. Parry). Bekesbourne, one, c. 1946 (R. Cheeseman). Broad Oak, stray ♀, on buddleia, August 5, 1950 (C.-H.).

4. Sandwich, very scarce on the dunes and rough pasture lying along the coast between the Stour estuary and Deal, noted in small numbers almost annually since about 1939 (D. M. Batchelor, *in litt.*, 13.9.1952); a few annually (D. F. Harle, *in litt.*, 15.2.1960). Richborough, a few annually (D. F. Harle, *loc. cit.*). Stodmarsh, ♀, August 4, 1947 (W. D. Bowden).

5. Crockenhill,* quite common on paths around the edges of lucerne fields, 1947-48 (D. F. Owen, *in litt.*). Biggin Hill, two, July 20, 1952 (E. J. Trundell), were probably strays (C.-H.). Badger's Mount, several, July 24, 1949, July 8, 1950 (L. W. Siggs); plentiful, and noticed up to 1957, not looked for since, also seen flying in the surrounding woods where they had been cleared recently (W. D. Hamilton).

6. Cuxton; near Holly Hill (Chaney (1884-87)). Near Meopham, not common c. 1913; Gravesend, in rough fields towards Thong, a few c. 1913; "On the chalk above Snodland, August 1951; it was in hundreds if not in thousands" (H. C. Huggins). Otford, plentiful, July 21, 1912 (Gillett, *Diary*); July 4, 1943 (J. S. Wachter MS.). Ryarsh, common annually (H. S. and J. Fremlin). Wrotham (B. K. West). Magpie Bottom, 1948 (J. F. Burton). Chalk downs around Longfield and Fawkham, fairly common, especially in 1952 (G. G. E. Scudder). Eynsford, fairly common (G. B. Browne, in *Wool. Surv.* (1909)); about 35 ♂♂, 2 ♀♀, July 20, 1952 (C.-H.). Shoreham, 1939 (Bull, *Diary*); common, 1953 (A. S. Wheeler). Birling, 1911, common 1913-14, 1925 (F. T. Grant). Cliffe Chalkpit, numerous c. 1949 (B. K. West).

6a. Darenth Wood, numerous in a field adjoining, 1930, and noted at flowers of *Chamaenerion angustifolium* (B. K. West); "common

(1947), the specimens most often seen resting on tree trunks" (D. F. Owen); one, July 27, 1949, "flying round an oak and settling on its leaves at 5 a.m.!" (J. F. Burton); abundant, August 4, 1950 (A. H. Heselden). Swanscombe Park, c. 1949, very common on gravel banks, roughly 100 seen in an afternoon (B. K. West); none observed 1960 (B. K. West and C.-H.). Lodge Hill Wood, few ♀♀ in "agricultural country", August 21, 1951 (Owen, *Lond. Nat.*, 1951: 31).

7. Darland Hill and border of Wigmore Wood, occasionally; Burham (Chaney (1884-87)). Burham, in a chalkpit, 1941 (A. M. Morley); several, August 18, 1957 (E. Philp). Detling, 1928, 1931 (Bull, *Diary*); two, August 30, 1941 (A. M. Morley). Bluebell Hill (Walker, *Ent. Rec.*, **10**: 103); September 3, 1912 (F. T. Grant); August 31, September 27, 1941, 25 seen on each visit (A. M. Morley); 1948-49 (L. N. Tesch); 1953 (A. H. Harbottle). Queendown Warren (Woodcock, *Rochester Nat.*, 1948: **6** (133), 2).

8. Dover.—1831 (Bree, *Mag. Nat. Hist.*, **5**: 335); 1833 (Stephens, *Ent. Mag.*, **1**: 527); 1846, A. G. Greenwood (*Ent. Rec.*, **24**: 292); 1859 (Rogers, *Ent. week. Int.*, **6**: 180). Coombe Wood, near Alkham (Hall, *Ent. mon. Mag.*, **24**: 77). Near Deal (Fenn, in *V.C.H.* (1908)). Updown, occasionally, 1944-45; Betteshanger, occasionally, 1944; Walmer, fairly frequent, 1944-47 (D. M. Batchelor). Kingsdown, annually (D. F. Harle, in *litt.*, 1960). Shepherdsweil (E. & Y. (1949)). Womeuswold, 1938, in open woodland (W. D. Bowden). Barham Downs, among the Roman excavations or "trench-work", ten, July 30, 1939; ♀♀, ♂♂, very numerous, August 5, 1950; ♂, July 22, 1951 (C.-H.). Folkestone.—Common in the Warren and East Downs (Knaggs, *Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 81); "Without doubt it is most numerous in the Warren (near end) and the Dover Hill: I have not found it very numerous on Sugar Loaf and the Middle Hill"; Warren, 1929-49; Downs, 1933-49 (A. M. Morley); common, 1955 (A. S. Wheeler). Near Newington, about 50, August 2, 1945 (A. M. Morley). "Occurs at Postling, but not beyond" (i.e. further north-west) (C. A. W. Duffield, *vide* A. M. Morley). Canterbury.—Near Canterbury, abundant (Parry, *Entomologist*, **5**: 394); Petham, roughly 100 or so in about 30 acres of chalk down, July 1937 (H. C. Huggins); between Bridge and Canterbury, one 1939, three 1941 (J. S. Wachter MS.); edge of Gorsley Wood, Bridge, several, c. 1946 (R. G. Gorer).

9. A ♂ and ♀, labelled "Margate, 1902, J. P. Barrett" (R.C.K.).

10. Brasted, "a few odd specimens" (R. M. Prideaux).

12. Willesborough, one flying about buddleia, 1958 (D. Youngs), was undoubtedly a stray (C.-H.).

13. "Tunbridge"* [Tunbridge Wells] (see *First Record*).

16. Folkestone Golf Course, one, 1945; Folkestone Town, ♀ in garden, 1947 (A. M. Morley). Hythe Old Golf Course, 1948 (E. Pilcher, *teste* A. M. Morley); ten, August 9, 1949 (A. M. Morley); the habitat is on the Lower Greensand at the top of the hill where the old 18th tee used to be, and the butterflies were mainly confined to a narrow stretch of ground, particularly to a cutting where the soil is exposed; it is very windswept and the insects tended to shelter in small hollows—two, fresh ♂♂, July 28, 1951, ten, August 5, 1951, none, 1955 (C.-H.).

VARIATION.—E. & Y. (1949) state that the form found in the Dover area is *ssp. anglicae* Vty. The description of *anglicae*, however, is so ill defined that it is doubtful whether it could be satisfactorily applied; moreover, undersides of all degrees of darkness are found in specimens occurring in this district as well as elsewhere in Kent.

Kentish specimens were placed in three main categories by Owen (*Ent. Gaz.*, 5 (1): 43-47) on the basis of the amount of dark flecking in the pale band on the hindwings. Form 1 showed much white in the pale band; form 2 was intermediate and showed a considerable amount of dark flecking in the white band; form 3 was the darkest and in the ♀♀ and some ♂♂, the pale band was almost or completely obscured. It was shown that of 75 specimens from chalk habitats (Eynsford and Barham Downs), 48% were referable to form 1, 38% to form 2, and 13.3% to form 3. It is interesting too that a similar analysis was undertaken of 65 examples from heath habitats (Hayes Common and Dartford Heath) with the following result: form 1, 32.3%; form 2, 35.4%; form 3, 32.3%. The two sets of results show a remarkable dissimilarity, and it was suggested that in the case of the heath colonies, whose populations had presumably recently originated from the chalk, natural selection had in a comparatively short period appreciably altered the butterflies from pale to dark.

The following aberrations are in R.C.K.:—Uppersides: *pallida* Tutt, ♀, Folkestone, 1902; ♀, Rochester, 1945; ♀, Snodland, 1904; *caeca* Tutt, 3 ♀♀, N. Kent, 1931-32; ♀, Margate, 1902; *postaeca* Schawerda, ♀, N. Kent, 1916, ♂, Dover, 1888; *punctata* Aign., ♀, N. Kent, 1922; *fulvina* Cab., ♀♀, Folkestone, 1901, 1914, 1947, ♀, N. Kent, 1927; *parviocellata* Lempke, ♂, Margate, 1902; *monocellata* Lempke, ♀, Dover, 1879 (Barrett, *Br. Lep.*, 1, pl. 30, fig. 1c). Under-side: *uniformis* Czekelius, ♀, Otford, 1923.

Adkin (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1920-21: 79) exhibited a ♂ "with four spots on the forewings" taken N. Kent, 1920.

South (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1907-08: 50) recorded two "curiously pallid" specimens taken near Canterbury, 1905 and 1906.

FIRST RECORD, 1699: "Papilio oculis nigris, subtus marmoreus. The black-eyed marble Butterfly. I caught this last summer at Tunbridge" (Petiver, *Musei Petiveriani*, 307). In 1702, Petiver (*Gazophylacium*, 9) called it "The Tunbridge Grayling".

1J. F. Burton (*in litt.*) says that the statement attributed to him in De Worms (*Lond. Nat.*, 1949: 55) is incorrect, i.e., he never reported it as common round Blackheath.

2J. F. Burton (*in litt.*) writes that the first Elmstead Wood specimen was a ♀ captured on bracken August 4; the first Sundridge Park specimen, another ♀ was captured July 30, and that he subsequently saw about a dozen imagines here. He says that D. F. Owen and he collected extensively at both localities in 1946 and they would have known of any existing colonies then. In Sundridge Park, they frequented rough, often wooded or scrub-covered hillsides bordering the golf course greens. "Chislehurst area" (Burton, in De Worms, *Lond. Nat.*, 1949: 55) refers to these two localities.

[(*Erebia goante* Esp.

Very doubtfully genuine.

8. "In September, 1902, I took a male and female of *Erebia goante*

. . . in Langdon Hollow here at Dover" (M. Smith-Richards, *Ent. Rec.*, 16: 267).]

[(*E. ligea* L.

Very doubtfully genuine.

9. "During last summer (in August 1874) a specimen of *Erebia ligea* was taken by me in the garden belonging to a house in Margate" (W. J. Mercer, *Entomologist*, 8: 198).]

[(*Satyrus dryas* Scop.

Very doubtfully genuine.

8. "In September, 1902, I took . . . one *Satyrus dryas* in Langdon Hollow here at Dover" (M. Smith-Richards, *Ent. Rec.*, 16: 267).]

Maniola jurtina L.: Meadow Brown.

Native. Meadows, downs, etc.; on *Agropyron repens* and *Poa annua*. In all divisions and probably occurring in every rough grassy field in the county; often abundant, especially in extensive uncultivated grasslands, and certainly in point of numbers the commonest butterfly.

Owen (*Lond. Nat.*, 1952: 33) observed that in the area adjacent to the metropolis it occurs commonly in gardens and parks and was formerly common on bombed sites. Burton (*Lond. Nat.*, 1954: 56) states that in the N.W. Kent marshes it is together with *Thymelicus lineola* Ochs. the only butterfly found at all commonly on saltings.

The butterfly has been noted as early as June 9 at Cobham in 1912 (F. T. Grant), and at Ham Street in 1948 (C.-H.), and has been noted at Dover as late as October 29 (Dale, *Hist. Brit. Butts.*, 95).

At Barham, July 22, 1950, two specimens which appeared to be *in cop.* were taken on the wing, both of which were ♂♂; it is perhaps noteworthy that one of them was a fresh example prominently marked with pale patch on forewing, whereas the other was in very poor condition with hardly any ground colour on upperside (C.-H.).

Several nearly full fed larvae were taken feeding on Couch-grass (*A. repens*) at night in woodland paths, Kemberland, Broad Oak, May 1937 (S. Morris and C.-H.); and I have watched ♀♀ depositing on Annual Poa (*P. annua*) at West Wickham (C.-H.).

VARIATION.—Extremely variable. I have ♀s with the pale forewing patch ranging from deep fulvous through pale-straw to almost white. The ♀ aberration with extra spot below apical on underside of forewing is not scarce, but that with two spots is, and I have a ♀ from Broad Oak, 1937, with four spots on underside of forewing, including one above apical (C.-H.). Pathological specimens with one or more pale blotches occur fairly often in this species, but extreme examples are scarce. South (*Entomologist*, 35: 2) records a ♂, taken Eynsford, 1901, normal above but having the discal area of underside of forewings whitish-grey. An albino is recorded from Dover, 1889 (Allbuury, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1892: 1), and I once saw in a swarm of *jurtina* at Bullockstone, c. 1936, an uni-

colourous whitish specimen which was unfortunately lost in the whirling mass (C.-H.).

Webb (*Entomologist*, 21: 133) records a ♂, Dover, 1887, al. expanse only $1\frac{1}{4}$ " and Weir (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1892: 46) exhibited one with "well defined ocellus on upperside of hindwings". De Worms (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1945-46: 35) exhibited a ♂, Folkestone, 1945, with apical spot absent—the rare ab. *anommata* Vty.

An extraordinary ♂, probably an example of homoeosis, has irregular splashes of orange on upperside of right hindwing; it was taken by me at Chilham Downs (div. 8), August 2, 1937 (C.-H.).

The following aberrations are in R.C.K.:—*fulvatincta* Fuchs, ♂; *suffusa* Tutt, ♂; *illuminata* Krul., ♀; *bi-irregularia* Leeds, bred; *alba* Blackie, ♀; *intermedia* Blackie, ♀; *brigitta* Ljungh., two ♀♀; *caeca* Rebel, three ♀♀; *erymanthoides* Strand, two ♀♀; *bioculata* Rebel, ♀; *addenda* Mousl., ♀; *marmorea* Lamb., ♀, two ♂♂; *minor* Leeds, ♀; *bioculata* Rebel, ♀; *flavescens* Tutt, ♀. Also a ♀ underside showing homoeosis.

The frequency and degree of underside hindwing spotting and the incidence of bipupillate forewing spots was undertaken in a population survey at Burham Down (div. 7) in 1955-56, and the results published (cf. Frazer, *et al.*, *Trans Kent Fld. Cl.*, 1957: 1: 14-15).

FIRST RECORD, 1831: Dover vicinity (Bree, *Mag. Nat. Hist.*, 5: 335).

M. tithonus L.: Gatekeeper.

Native. Hedgerows, bushy places, woods, copses, heaths, sea-walls, salt-marsh borders, etc.; foodplant unknown. Fairly well distributed and often plentiful in 3 and 11-14; rather local in 1 and 2. Generally infrequent on calcareous soils.

In N.W. Kent in 1894, Fenn (*Ent. Rec.*, 6: 229) stated that "it was formerly one of the most abundant of our butterflies, swarming along hedges, and occurring commonly in gardens and many other places; it began to disappear about 1878 and is now quite extinct". By 1909, however, it had evidently re-appeared in this area, for according to Tutt (*Wool. Surv.*) it was "locally common in lanes and on the outskirts of woods".

Obs.—A ♂ appeared at m.v.l. at Ham Street, July 23, 1951 (C.-H.).

1. A ♂ and ♀ labelled "Lewisham, July, 1852, P. C. Zeller, ex Stainton coll." (Brit. Mus.). Pauls Cray Common, common, 1887 (F. S. Coles, *vide* Fenn, *Diary*). Brockley, c. 1889 (Turner, *Ent. Rec.*, 1: 349). Greenwich Park (Webster, *Greenwich Park: its History and Associations*). Eltham and Keston, three ♂♂, August 8, 1905 (T. G. Edwards). Shooters Hill, Lee, Lewisham, Blackheath—W. West; Bexley district, abundant—L. W. Newman; disappeared from Eltham, but occurs at Dartford Heath—A. H. Jones; common locally at Farnborough, Bromley, Keston, Orpington—H. Alderson; Chislehurst—G. B. Browne; Abbey Wood—H. E. Page (*Wool. Surv.* (1909)). Dartford Heath, several, August 1, 1912 (Kidner, *Diary*), plentiful, 1950 (L. T. Ford), common, 1953 (A. S. Wheeler). Eltham, ♂s very plentiful, July 5, 1911 (Jones, *Entomologist*, 44: 301). Chislehurst, common (S. F. P. Blyth). Crayford, a few, July 24, 1927 (A. R. Kidner). Very

common, 1946, at Hayes Common, Joydeus Wood, Dartford Heath; strays, 1946-47, at Sundridge Park; common, 1948, at St. Pauls Wood and Holwood Park (D. F. Owen). Bexley, 1942, 1944 (A. S. Wheeler). North Cray, plentiful, 1950 (L. T. Ford). Petts Wood, 1948 (A. S. Wheeler), common, 1951 (A. M. Swain). Well Wood, West Wickham, several, 1950; Hayes Common, several, 1952, 1955. In 1952, W. A. Cope told me that it was much less common about Bromley before the war (C.-H.). Abbey Wood, not included by Juby and Hards (1925) for the period 1914-24; and Showler (*Ent. Rec.*, **68**: 125), writing in 1956, states that it has certainly disappeared from here.

[(Lewisham area (Burton, in *De Worms, Lond. Nat.*, 1949: 56) is erroneous (J. F. Burton, *in litt.*))]

2. Erith, common, 1876 (Fenn, *Diary*). Rochester, "abundant on west side of Medway" (Chaney (1884-87)). Sheppey, abundant, 1900 (Fletcher, *Entomologist*, **34**: 371); 1910 (J. J. Walker coll.); very plentiful, 1919 (Betts, *Entomologist*, **53**: 67). Faversham* (Robertson, *Entomologist*, **52**: 59). Particularly common in 1947 at Cliffe, Cooling, and Halstow marshes, Isle of Grain, and west bank of Medway estuary (Owen, *Entomologist*, **83**: 120). Widespread between Higham and All Hallows, August, 1953, and especially numerous near the sea-wall (Owen, *Ent. Rec.*, **65**: 279). Very common about Dartford, Northfleet, Higham (A. A. Allen). Port Victoria, Isle of Grain, very common, 1952 (G. G. E. Scudder). N.W. Kent marshes, not included for here by Burton (*Lond. Nat.*, 1954: 54-60).

4. Deal,* 1902 (Browne, *Entomologist*, **35**: 269). Reculver, ♀, August 9, 1923 (H. G. Gomm). Stodmarsh, several, August 4, 1947 (W. D. Bowden). Sandwich area, a few, "always near to trees" (D. F. Harle, *in litt.*, 1960).

5. Chevening, August 5, 1917 (Gillett, *Diary*). Westerham (R. C. Edwards). Biggin Hill, ♂, July 20, 1952 (C.-H.). Badger's Mount, not seen, 1948-60 (W. D. Hamilton, *in litt.*).

6. Rochester, "I have seen it in July on rough ground at Tower Hill"* (Walker, *Ent. Rec.*, **10**: 103). Otford, 1912 (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1912-13: 98). Gravesend, 1912, common, August 1913; Meopham, 1925 (F. T. Grant). Castle Wood, Shoreham, fairly numerous, 1939-50 (H. E. Hammond). Fawkham, local (E. J. Hare). Cobham,* common (J. F. D. Frazer). Apparently absent from woods round Otford, Shoreham and Eynsford (D. F. Owen and J. F. Burton, in *De Worms, Lond. Nat.*, 1949: 56).

6a. Chattenden (Frohawk, *Entomologist*, **24**: 273, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1891: 136); 1912, common, August 6, 1925, 1939 (F. T. Grant) (Woodcock, *Rochester Nat.*, 1948: **6** (133) 2); common (B. K. West). High Halstow, several very worn examples, August 24, 1952 (J. F. Burton). Darenth Wood, small colony in field adjoining, c. 1950; Swanscombe Park, small colony, c. 1950 (B. K. West).

7. Chatham, more local and less common on east side of Medway than west (Chaney (1884-87)). Burham Down, Boxley, Bluebell Hill, Bredhurst; abundant, 1948-49 (L. N. Tesch). Ryarsh,* fairly common (1950) (J. Fremlin), used to be much commoner, 1880-1900 (H. S. Fremlin). Boxley, common, 1953 (A. H. Harbottle). Walderslade (Woodcock, *loc. cit.*). "Rather rare at Westwell and on the downs" (Scott (1950)).

8. Near Dover (Bree, *Mag. Nat. Hist.*, 5: 335). Dover area, "cannot be obtained under a ten miles inland excursion" (Webb (1899)). Kingsdown, August 25, 1874, common, August 1, 1875 (Fenn, *Diary*). Adisham* (Webb, *Ent. mon. Mag.*, 24: 131). Folkestone, "Taken inland and in the Warren" (Knaggs, *Qtly. J. Folkestone Nat. Hist. Soc.*, 1869 (4): 81). Folkestone Warren, c. 1930; Dover, one, 1948 (E. & Y. (1949)). Cockerling Wood, once only c. 1890 (S. Wachter MS.); one, August 1941 (J. S. Wachter MS.). Wye*; Brook* (C. A. W. Duffield). Covert Wood, ♀, August 8, 1954 (W. D. Bowden). Folkestone, a few, July 27, 1955 (A. S. Wheeler). Whitehill Wood, Bridge, several, July 31, 1955 (C.-H.).

"E. C. Joy wrote 'absent' on the draft of the 1931 Folkestone list" (A. M. Morley). Stelling Minnis, 1948, D. Smith; near Bridge (A. M. Morley).

9. Margate, not uncommon along the disused railway line, c. 1930 (H. C. Huggins).

10. Brasted, capricious, never abundant (R. M. Prideaux). Westerham (R. C. Edwards). Sevenoaks, one only, 1948 (F. D. Greenwood).

15. Dungeness, two, c. 1938 (J. A. Parry); several, July 20, 1952, July 20-27, 1957 (E. Philp). Littlestone, in numbers, 1949 (R. Walley, *vide* A. M. Morley). Between Lydd and Brookland, flying in numbers along banks bordering fields and dykes where there was no hedge-cover, July 12, 1959 (C.-H.).

16. West Hythe, c. 1923-30, noted as common annually by D. Saunders (Morley (1931)). Near Lympe, 1949 (A. M. Morley).

VARIATION.—The following aberrations are in R.C.K.:—*pallida* Leeds, Blean, ♀, 2 ♂♂, 1923; *pallidemarginata* Ob., ♀, Herne Bay, 1940; *minor* Rocci, Blean, 1923; *trans. ad lucida* Byles, ♂, Blean, 1923; *albinotica* Goodson, holotype ♀, Blean, 1897; *depupillata* Goodson, holotype ♂, near Ashford, 1934.

The ab. with three distinct ocelli on forewing is rather scarce in Kent. It has been taken by Frohawk at Chattenden (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1891: 136); and I took 2 ♀♀, 1937, ♂, 1938, at Broad Oak, resulting from an examination there during those years of several hundreds of normal specimens (C.-H.).

Jarvis (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1949-50: 15, 35) exhibited a ♂, taken Bromley, 1949, which appears to be ab. *albinotica* Goodson.

Bull (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1940-41: 24) exhibited ab. *addenda* Tutt, from Ashford.

FIRST RECORD, 1828: "Found copiously in meadows and grassy lanes . . . throughout the metropolitan district" (Stephens, *Haust.*, 1: 59). The first record, however, which actually mentions Kent is that of Bree (*loc. cit.*).

Coenonympha pamphilus L.: Small Heath.

Native. Grassy places generally; on *Festuca ovina* (*sensu lato*). Found in all divisions, and doubtless occurring in almost every uncultivated grassy stretch in the county.

"Everywhere common in fields, marshes, hillsides" (V.C.H. (1908)).

Owen (*Lond. Nat.*, 1952: 33) states that in N.W. Kent it penetrates well into towns, where it survives in parks and on railway banks, and became temporarily abundant during the bombed site era (c. 1945-50)

at Lewisham and Greenwich. Burton (*Lond. Nat.*, 1954: 56) states that in the N.W. Kent marshes, its chief habitats are pasture, river-walls, rough fields and scrub and that it tends to be most numerous in the first two.

In 1927, Kidner (*Diary*) first noted it on May 10. Owen (*op. cit.* 36) records that in 1947 a few were seen as late as the third week of October, and suggested that these constituted a partial third generation.

On September 17, 1960, Miss C. A. McDermott witnessed a ♀ ovipositing in the wild at Knole Park (div. 10) on Sheep's Fescue (*F. ovina*).

VARIATION.—The following aberrations are in R.C.K.:—Uppersides: *detersa* Vty., ♀; *antibipunctata* Lempke; *nosolica* Pruf., ♀, ♂; *anticrassipuncta* Leeds; *semimarginata* Rebel, ♂; *pallidula* Leeds, 3 ♂♂; *albescens* Robs. & Gard., ♂; *brunnescens* Leeds, several; *obsoleta* Tutt, ♀. Undersides: *anticastanea* Leeds, ♂; *murina* Vty., ♂; *antirufa* Leeds, ♀; *nolkeniana* Strand, ♀; *antiparvipuncta* Leeds, ♂; *postobsoletissima* Leeds, ♂; *neca* Strand, ♀. Also a ♂ underside showing homoeosis.

One with the apical ocellus absent from underside of forewing, Birchington, c. 1930 (C.-H.).

Numerous other aberrations and pathological examples have been recorded (cf. *Entomologist*, 21: 132, 67: 84; *Ent. Rec.*, 22: 175; *Proc. Cy. Lond. ent. nat. Hist. Soc.*, 1912-13: 55; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1914-15: 135, 1918-19: 106, 1930-31: 55; 1931-32: 69, 1933-34: 50, 1942-43 (2): 26, 1956: 42; Frohawk, *Nat. Hist. Br. Butts.*, 2: plt. 41, fig. 24).

FIRST RECORD, 1832: Dover (Bree, *Mag. Nat. Hist.*, 5: 335).

Aphantopus hyperanthus L.: Ringlet.

Native. Woods, copses, bushy places, saltmarsh borders; foodplant unknown. Plentiful in 3, 5-8, 10-14; much reduced in 1; local in 2; very local in 9 and perhaps now extinct.

Owen (*Lond. Nat.*, 1952: 33) states that in W. Kent typical habitats are chalk down, deciduous woodland, rough fields; adding that it is also found on heathland and saltmarsh.

Obs.—On April 5, 1938, I found a larva amongst *Agrostis stolonifera* and *Agropyron pungens* at the base of the cliffs in the Warren below Capel le Ferne (div. 8), from which a ♂ was reared (C.-H.).

1. Shooter's Hill (Rennie, *Conspectus*, 13). Penge Common (Rennie, *loc. cit.*); c. 1837 (Stainton, *June: a Book for the Country in Summer Time*, 95). Abbey Wood, 1859, "most abundant, flying in swarms about every bramble bush" (Cox, *Ent. week. Int.*, 6: 139). Paul's Cray Common, 1887 (F. S. Coles, *vide* Fenn, *Diary*). West Wood; Shooter's Hill; Joydens Wood; Chelsfield (*Wool. Surv.* (1909)). Near St. Mary's Cray (S. F. P. Blyth). Joydens Wood, common, 1946; Hayes Common, 1947 (D. F. Owen). Petts Wood, 1950, 1952; Keston (A. M. Swain).

2. Royal Oak, Sheppey, July 10, 1869 (Walker MS.); Sheppey, several (J. J. Walker coll.). Higham, common, 1904-10 (H. C. Huggins). Between Higham Saltings and All Hallows, in numbers annually, existing in well-defined colonies (Owen, *Lond. Nat.*, 1952: 33; *ibid.*, *Entomologist*, 83: 120).

9. Between Cliftonville and Broadstairs, in the old railway cutting, three or four per annum, 1929-30 (H. C. Huggins). Two labelled: "Near Margate, 26.vii.1940"* (R.C.K.).

VARIATION.—The following aberrations are in R.C.K.:—*hyperantella* Strand, ♂, N. Kent, 1924; *pseudohyperantus* Strand, 4 ♂♂, N. Kent, Folkestone, Blean; *hyperantoidana* Strand, ♂, Blean, 1922; *nigra* Pilleau, ♂, Folkestone, 1902; *trans. ad marpurgensis* Strand, ♂, Chattenden, 1892; *hyperantoides* Strand, ♂, Folkestone, 1902, Blean, 1923; *arete* Mull., ♀, 3 ♂♂, E. Kent, Blean, Chattenden, near Margate; *caeca* Fuchs, 8 ♂♂, E. & N. Kent, Chatham, near Margate, Blean; *obsoleta* Tutt, ♀, 4 ♂♂, Sevenoaks, Folkestone, Chatham, Blean, Darenth. Also two pathological ♂♂, Chattenden, 1856, Folkestone, 1916.

Specimens occasionally occur with a tendency for the eye-spots to be lanceolate; extreme examples of this are however very scarce indeed and are instanced by the following, all of which appear referable to *lanceolata* Shipp:—Folkestone, one, 1900, one, 1902, C. P. Pickett (Brit. Mus. (S. Kensington)); a ♂, labelled: "Isle of Sheppey, J. J. W." (J. J. Walker coll.).

Ab. *caeca* Fuchs is not scarce in my experience; I have taken single examples at Chilham, 1937, Blean, 1938, four at Wooton, July 14, 1938, and have seen others at various times. Pathological specimens, i.e. with whitish blotches on one or more wings, seldom occur in this species, and I have only noted single examples at Hoads Wood (div. 11), 1958, and at Blean, 1938 (C.-H.). Numerous other aberrations have been recorded (cf. *Entomologist*, 4: 18, 21: 256, 53: 175, 83: 119; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1899: 107, 1902: 112, 1924-25: 124, 1946-47: 47, 1956: 42; *Proc. Cy. Lond. ent. nat. Hist. Soc.*, 1905: 11, 1910: 8; Given (1946); E. & Y. (1949); Dale, *Hist. Brit. Butts.*, 100).

FIRST RECORD, 1799: "It frequents lanes and hedges on dry and elevated banks, such as are common in the sandy and chalky soils of Kent" (Donovan, *Nat. Hist. Br. Ins.*, 8: 54). A more positive Kentish notice is to be found in Arnold, *Robert Pocock*, 140: Between Gravesend and Shorne, June 25, 1822.

Melanargia galathea L.: Marbled White.

Native. Chalk slopes and grassy waysides, rough pastures, wood-borders, etc.; [on *Festuca ovina* (*sensu lato*)]. Locally abundant in North and East Kent.

This species, like a number of other Satyridae, has undergone considerable distributional changes during its known history. It has always been present in 8 and probably so in 6a, 7 and 9. During the 19th century it had a wide range on the chalk, but about 1900 began to contract in West Kent and by 1920 was apparently extinct west of the Medway except in 6a. About 1935 the butterfly began to increase in the east, so much so that ten years later it was abundant in many non-calcareous districts of east and north-east Kent. By 1950, it had penetrated far into the Weald, and at the present time is generally distributed in suitable places on the chalk and locally plentiful in many localities off it, throughout the eastern half of the county. West of the Medway, it seems to be still virtually non-existent, except in 6a and possibly very locally in the eastern half of 6.

Obs.—A ♂ emerged July 21, 1938, from a larva taken by me at Chilham Downs (div. 8), May 2, 1938. Unfortunately I did not take

particular note of the grass upon which it was found; there was, however, a considerable quantity of Sheep's Fescue (*F. ovina* (*sens. lat.*)) at this spot and the late S. Morris told me at the time, he strongly suspected that this was its foodplant here (C.-H.).

In 1948 A. M. Morley saw one in Folkestone Warren (div. 8) as early as June 16; and in 1947 the same observer noted one at Danton Pinch near Newington (div. 16) as late as September 10.

1. "I have taken it abundantly at Birch Wood" (Newman, *Young England*). Between Shooter's Hill and Welling, one, 1858 (A. H. Jones, in *Wool. Surv.*). Bexley, two, 1903; common a few miles distant [at Eynsford in div. 6] (L. W. Newman, in *Wool. Surv.*). Chislehurst Common area*, occasionally seen, 1934-46 (F. R. Browning, *fide* de Worms, *Lond. Nat.*, 1949: 56)¹. Keston, one seen by E. M. I. Bird in his garden in 1952 (C.-H.).

2. Faversham Creek, a few, c. 1944 (L. T. Ford).

3. Herne Bay, 1858, abundant on the sea-shore and adjoining fields (McLachlan, *Ent. week. Int.*, 4: 126); near Herne Bay, abundant in 1859 (Butler, *Ent. week. Int.*, 6: 180). Herne, very abundant (Cox, in Newman, *Brit. Butts.* (1871)). Thornden Wood, July 30, 1865; East Blean Wood, three larvae off grass, May 30, 1866, imagines reared, July 12, 1866 (Fenn, *Diary*). Sturry, fresh ♂, passing through garden, August 1, 1936; Kemberland, July 11, 1937; Broad Oak, small numbers in rough pastures towards Mayton, 1938-40; Sturry, several, July 11-21, 1939 (S. Morris, *Diary*). Fields bordering Barton and Paddock Woods, about ten, July 22-24, 1938; Little Hall Wood, small colony, 1944, 1946; Hersden, 1951; Broad Oak, few, 1946, 1950-53 (C.-H.). "Everywhere around Canterbury of late" (J. A. Parry, *verbatim*, 1949).

4. Ham Marshes, July 14, 1891, a few August 8, 1892 (Fenn, *Diary*). Ebbsfleet, ♀ July 30, 1924 (H. G. Gomm). Sandwich sandhills, 1955 (E. Philp), a few, 1957, 1960 (C.-H.).

5. Green Street Green and Chelsfield, a few (Barnes, in *Wool. Surv.* (1909)). Between Cudham and Downe, one taken in 1935 by Mrs. L. Butler (F. R. Browning).

6. Thong, June 25 and July 4, 1822 (Arnold, *Robert Pocock*, 140-141). "In a little chalk pit at Greenhithe" (Newman, *Brit. Butts.* (1871)). Gravesend (Barrett, *Entomologist*, 10: 265). Shoreham, very abundant, 1885-88 (Fenn, *Diary*); 1898, 1899 (Carr, *Entomologist*, 32: 40, 33: 46) (*V.C.H.* (1908)). Halling and Cuxton (Walker, *Ent. Rec.*, 10: 103). Eynsford, common (*Wool. Surv.* (1909)). Strood (*V.C.H.* (1908)). Near Thong, a few locally, 1902-05; Cuxton-Birling chalkdowns (H. C. Huggins). Otford, fair numbers, July 13-14, 1912 (Gillett, *Diary*). Shoreham, 1916 (W. A. Cope). [Eynsford district], on July 22, 1920, L. W. Newman reported that it had apparently gone from W. Kent (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1920-21: 67). Magpie Bottom and Trottescliffe, "*galathea* was at Magpie Botton in 1950. I saw about 4 in two days there . . . it was also above Trottescliffe the same year in fair numbers" (H. E. Hammond, *in litt.*).

6a. Darenth Wood (Stephens, *Haust.*, 1: 58); a few, 1856, "I am told it has not occurred there for many years" (Mercer, *Ent. week. Int.*, 1: 166); "In profusion twenty years ago in one particular spot, nearly destitute of trees" (Newman, *Brit. Butts.* (1871)). Four Elms Hill; Lodge Hill; Chattenden Roughs and meadows adjacent; Cobham Wood (Chaney (1884-87)). Cobham Park (1897); near Upnor (Walker, *Ent.*

Rec., 10: 103). Cobham, one, 1909 (J. J. Walker coll.). Chattenden, four, July 27, 1862; 1888 (Fenn, *Diary*); a few 1863 (Morris, *Week. Ent.*, 3: 286); twelve, July 16-26, 1869 (Walker MS.); formerly abundant, now scarce (Tutt, *Brit. Butts.* (1896)); 1899 (James, *Ent. Rec.*, 12: 107); 1912, 1938, four July 11-12, 1939 (F. T. Grant); abundant, 1947 (D. F. Owen) (Owen, *Lond. Nat.*, 1952: 28). Swanscombe Park, ♀, August 3, 1947 (B. K. West).

7. Westwell Downs, fifteen, June 27, 1857 (Russell, *Ent. week. Int.*, 2: 116). Chilham, in three localities (Stowell, in Newman, *Brit. Butts.* (1871)). Rochester district, only twice east of the Medway: one, Darland Hill; one, Wigmore Wood (Chaney (1884-87)). Doddington, 1895, 1905 (Chitty coll.). Eastwell Park, abundant (Goss, in *V.C.H.* (1908)). Westwell, very common on the downs (Scott (1936, 1950)). Godmersham, numerous, 1939 (C.-H.). Hollingbourne Hill, very abundant; seems to be repopulating at Walderslade and Burham Down (Woodcock, *Rochester Nat.*, 1948: 6 (133): 2). Queendown Warren, appeared for the first time here in 1947 (Major, *Bull. Amat. Ent. Soc.*, 1948: 8 (93): 215). Bredhurst Wood, very occasional, July 1949 (L. N. Tesch). Boxley, common, 1953 (A. H. Harbottle). Hollingbourne, several, 1955 (C.-H.).

8. The records indicate that *galathea* has always been more or less plentiful coastally in this division, but noticeably more restricted in the west at least until comparatively recently.—“Taken in Cockering Wood, 1894, where it was always in great abundance but in no other woods or downs close to Canterbury” (S. Wachter MS.). Crundale, 1927-28, 1933; Wye, 1928-35 (Bull, *Diary*). Stowting (C. A. W. Duffield). Chilham Downs, decidedly local up to 1935 (C.-H.).

9. Margate (Cox, in Newman, *Britt. Butts.* (1871)). Ramsgate neighbourhood (Willson, *Entomologist*, 23: 139). Kingsgate, July 6, 10, 1921 (Gomm, *Diary*). Birchington, locally fairly numerous on the sea-cliffs, 1926-33 (C.-H.). Lower Hale, abundant, July 27, 1946 (W. D. Bowden). Broadstairs, 1956 (N. Thorn).

10. Sevenoaks* (Carrington, *Entomologist*, 13: 78).

11. Hoads Wood (1950) (P. Cue); several, July 22, 1958 (C.-H.).

12. Birchett Wood, a flourishing colony (Scott (1936)). Kingsnorth, 1947 (E. Scott). Ham Street, numerous, 1946, 1951-53, 1960 (C.-H.). Ruckinge; Bilsington; Kennington; numerous at all three places in 1951 (C.-H.).

14. Near Gills Green, Hawkhurst, small colony, 1949-50, still in small numbers in 1954 (B. G. Chatfield). Wood between Sanden and Eaglesden, one, 1950 (R. S. White). Hunts Wood, two, July 9, 1949 (A. M. Morley).

15. Ruckinge, common near level crossing, 1938 (E. Scott). Has spread to the banks of the Military Canal (Scott (1950)).

16. Hythe, plentiful, 1951, and doubtless in numerous other localities in this division (C.-H.).

VARIATION.—A most remarkable and perhaps unique aberration of this species was taken by T. Marshall between Walmer and Dover, in July 1843, and exhibited (*Proc. ent. Soc. Lond.*, 1843: 93). It is a ♂ “of a clear milky white colour, and has not, on either the upper or under side of its wings the smallest speck of black. Its thorax, abdomen and palpi are also entirely clothed with white” (Marshall, *Zoologist*, 471). The specimen, which is figured by Frohawk (*Vars. of*

Brit. Butts., plt. 7, fig. 1), is in the National Museum of Wales, Cardiff, and as it does not appear to have a name, I propose to call it **totaalba** (C.-H.).

In direct contrast to *totaalba* is ab. *lugens* Ob. (= *nigra* Frohawk), which is uniformly blackish, a ♂ of which was taken at Lodge Hill, July 16, 1871, by Mr. Doran (Vaughan, *Proc. ent. Soc. Lond.*, 1871: 35). A ♂, apparently referable to *trans. ad lugens*, was taken in S.E. Kent, 1947 (Tunstall, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1947-48: 16, 37).

A striking ♂ ab. having the black markings very greatly suffused over the largest portion of upper and underside of forewing was taken near Dover (Bree, *Mag. Nat. Hist.*, 5: 335); and Barrett (*Entomologist*, 10: 265) records that he took a ♀ of the rare ab. *mosleyi* Ob. (= *albobasilaris* Frohawk), at Chattenden, July 23, 1875.

Buckstone (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1939-40: 2) exhibited a ♂ ab. with abnormal wing shape and markings, Folkestone, 1924; also ♂ and ♀ abs. from Chilham, "with subapical spots of the forewings duplicated".

Jones (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1914-15: 135) exhibited a ♂ ab. taken at Folkestone "showing decrease of black marking on the upperside, so that the central transverse white area was regular and continuous"; and Marsh (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1951-52: 34, plt. 3, fig. 5) exhibited ab. *rubra* Mosley, ♂, Ham Street, 1951.

Webb (*Entomologist*, 21: 132) observed that near Dover in 1883 "the marginal line of spots were often wanting"; and mentions among other abs. from here, one with the "hindwings uniformly black".

The following aberrations are in R.C.K.:—Uppersides: *macrea* Oliver, ♂, Dover; *zobeli* Heinr., N. Kent, ♀, 1909, ♀, 1921; *ocellata* Zus., Dover, ♀, 1908; *trans. ad nicoleti* Culot, ♂, "Near Dover, July, 1874" (Stevens, *Entomologist*, 9: 193, figd.); *rubra* Mosley, ♂, Folkestone, 1933. Undersides: *deubali* Silb., ♂, N. Kent, 1924, ♂, near Canterbury, 1934; *semigalene* Strand, ♂, N. Kent, 1931; *caeca* Lempke, ♂, Folkestone, 1896; *trans. ad vitrimontis* Kess, "Taken by H.W.S. at Snodland, July '87" (Frohawk, *Nat. Hist. Brit. Butts.*, 1, plt. 31, fig. 24); *trans. ad galene* Ochs., ♂, Chattenden.

FIRST RECORD, 1798: "I may mention that *Papilio (Arge) galathea* was plentiful about St. Margaret's Bay, near Dover: this was in 1798 and 1799" (L. W. Dillwyn, in litt., teste Smith, *Entomologist*, 11: 175).

¹It is possible that this record is based upon the specimen taken in 1935 in div. 5, and upon that only (C.-H.).

NYMPHALIDAE

Apatura iris L.: Purple Emperor.

Native. Woods; on *Salix*. Local and scarce in the Weald; doubtful if now present elsewhere in Kent.

The Purple Emperor was formerly widespread and locally plentiful in Kent, but about 1850 began to retreat from a number of areas and although still numerous in 6a (Chattenden) in the 1870's, it rapidly declined thereafter, and by 1890 was more or less restricted to the Weald. This region, perhaps because it is a relic of primeval forest, seems always to have been a stronghold of the species, and judging from the records, it has persisted here until the present day. The butterfly is markedly more frequent in certain years, and is then liable to appear

in districts whence it has long been absent. It is noteworthy that rather more *iris* were seen in Kent in 1952 and perhaps in 1934 than at any other time within the past forty years.

1. Birch Wood, c. 1830 (Anon., *Ent. Mag.*, 3: 310). "It has long been extinct in the London district" (Goss, in *V.C.H.* (1908)).

3. Perry Wood, Selling (Stowell, in Newman, *Brit. Butts.* (1871)). Canterbury* (*V.C.H.* (1908)). Den Grove, c. 1905 (Newman Catt., *vide* D. G. Marsh). Bossenden Wood, one seen, 1912 (H. C. Huggins). [(J. Shepherd, who worked the Blean Woods from 1911-1949, told me (in 1949) that he had not seen it there before 1937, when he released some 30 insects from W. Sussex stock; one was seen in July 1938 but none since, and he considered it was probably extinct (C.-H.))]¹.

5. "An old collector named Daniel Holman showed me two males feeding on a dead hedgehog at Meanfield Hill, Shoreham. This would be about 1912" (H. E. Hammond *in litt.*).

6a. Darenth Wood (Stephens, *Haust.*, 1: 51); seen several times in August 1856 (Mercer, *Ent. week. Int.*, 1: 166); three ♂♂, taken July 1858 (Fisher, *Ent. week. Int.*, 6: 43). [Darenth Wood (Owen, *Entomologist*, 84: 173)]². Cockham Woods, "Have been informed that it occurred here some years ago" (Chaney (1884-87)). [Chattenden].—Woods near Chatham, July 1857, often seen, several taken (Crozier, *Ent. week. Int.*, 2: 132); nine taken "in Kent", July 1859, "unusually scarce" (Allchin, *Ent. week. Int.*, 7: 187); North Kent, not uncommon, 1874 (Porritt, *Entomologist*, 7: 181, *Ent. mon. Mag.*, 11: 68); near Chatham, one, 1883 (Frohawke, *Entomologist*, 17: 64). Chattenden.—"I heard yesterday that Packman has taken about 80 *A. iris* at Chattenden, 40 in one day" (Fenn, *Diary*, July 23, 1874); six, 1875, three, 1876 (J. P. Barrett coll.) (*Ent. mon. Mag.*, 12: 166); in abundance in 1876, 1877, 1878 (Goss, in *V.C.H.*); in 1881 alone, some two or three hundred specimens were captured (Sheldon, *Entomologist*, 58: 106). At meeting of Ent. Soc. Lond., May 6, 1896, J. W. Tutt said it so abounded at Chattenden in the 1870's that captures of two dealers decreased from about 250 in 1880 to an odd specimen or two in 1888³, since when it had been practically extinct (*Ent. Rec.*, 8: 83). Cobham*, "Has been seen at intervals in the Cobham district" (Walker, *Ent. Rec.*, 10: 103).

7. Westwell, ♀, seen by F. W. Andrews, August 27, 1922; another seen by E. Scott, c. 1922 (Scott (1936)).

8. Near Deal, ♀, taken (1858) on the cliffs (Harding, *Ent. week. Int.*, 4: 141). Penny Pot Wood, one, 1903, one, 1904 (Parry coll.). Wye* (*V.C.H.*, 1908). West Wood—C. R. Haxby told me he positively identified from a few feet away a ♀ *iris* which flew up from a stone trough at West Wood on August 14, 1960 (C.-H.).

10. Westerham* (see *First Record*). Knole Park, two imagines (Stainton, *Man.*). Near Sevenoaks*, 1857 (Farren, *Ent. week. Int.* 2: 171).

11. Stated to occur in the woods around Pluckley (Hammond, in Newman, *Brit. Butts.* (1871). Mereworth Woods, formerly (Goodwin, *vide* Goss, in *V.C.H.* (1908)). Penshurst-Tonbridge area, ♂ seen in 1939 by L. R. Devenish and N. Carter (*Lond. Nat.*, 1940: 16). Hoads Wood, numbers seen c. 1916 by F. W. Andrews (E. Scott); seen 1950, 1951, one July 3, one July 7, 1952 (P. Cue); five seen 1952, including ♂ and ♀ between July 15 and August 1, several seen 1953, fresh ♀ taken July 8, 1954, larva found June 2, 1955, on "Narrow leaf sallow"

from which a ♂ emerged July 5; no more *iris* seen since despite annual visits (W. V. D. Bolt, *in litt.*, 22.x.1960).

12. Ashford, ♀ taken in the town, 1856 (Russell, *Ent. week. Int.* 2: 27). Ashford district, two ♂♂, two ♀♀ taken, including pair *in cop.* (Russell, *Ent. week. Int.*, 4: 157). Hothfield, two seen, 1920 (H. C. Huggins). "East Kent" [Orlestone Woods], twenty bred by E. Goodwin, 1910-13 (Goodwin coll.). Ham Street.—W. A. Cope told me that he used to find the larvae and imagines fairly plentifully here, and that he once saw 4 ♀♀ on the edge of Long Rope in less than 15 minutes; I have numerous specimens of his labelled "Orlestone" and variously dated 1909, 1911, and 1912 (C.-H.). "It persists in the woods of the Weald [Ham Street], where it has been seen yearly since 1932. More specimens were seen in 1934 but I have not heard of one being taken" (Scott (1936)). Kennington, ♂ seen August 23, 1944 (Sankey, *Ent. mon. Mag.*, 80: 237). Ham Street, one seen 1933 by H. B. D. Kettlewell (C.-H.); ♀ taken 1944 in Long Rope (Sankey, *Ent. mon. Mag.*, 80: 213); two, July 12, 1947 (E. Scott); ♂ taken August 1948 by E. J. Hare (C.-H.); ♀ seen July 31, 1948 (de Worms, *Entomologist*, 82: 128); one seen by E. C. Joy, July 9, 1933; one seen on a sugar patch (in 1933), one seen (in 1934) on the bonnet of a car, one seen July 28, 1935, all by A. M. Morley; two or three seen by N. G. Wykes around top of high oak, July 12, 1949; a larva found by W. Quibell [c. 1935] (A. M. Morley); W. Stickles picked up a ♂, c. 1953, along edge of Burnt Oak which had been knocked down by a passing car (C.-H.).

13. Pembury, common (Stainton, *Man.*). Tunbridge Wells, one seen August 1860 (Dart, *Ent. week. Int.*, 8: 188). Near Cranbrook, common in 1883 (Goodwin, *vide* Goss in *V.C.H.*). Bedgebury Park and Hempstead Wood near Benenden, imagines numerous in 1881 (W. A. Cope). Sissinghurst, several seen August 1891 (Bowell, *Ent. Rec.*, 3: 63).

14. Tenterden, two seen (1853) (Beale, *Zoologist*, 4130).

16. "A collector I met informed me that he had seen *Apatura iris* in a small wood at the back of Hythe in 1897" (Heitland, *Entomologist*, 31: 222).

VARIATION.—The following aberrations are in R.C.K.:—*deschangei* Cab., Chattenden, ♂ 1865, J. W. Wood (despite the date, possibly the same as that exhibited as *ab. iole* Schf., March 6, 1865 (cf. Wood, *Proc. ent. Soc. Lond.*, 1865, 85)), Chattenden, ♂, August, 1886; *lugenda* Cab., Chattenden, 1866 (Frohawke, *Nat. Hist. Brit. Butts.*, pl. 29, figs. 22-23, as *iole*); *iole* Schf., Chattenden, ♂, July 1878, H. W. Sabine.

The following may be referable to *ab. iole* Schf.:—Chattenden, July 1871, W. Marshall (in *Brit. Mus. (S. Kensington)*). [Chattenden].—one, 1877, another 1881, both taken "in Kent" by E. Sabine (*Sabine, Entomologist*, 14: 177-178); one taken, 1881, by Packman (*Sabine, Entomologist*, 14: 210).

It has been suggested by Tugwell and Frohawk (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1893: 103) and Hall (*Entomologist*, 29: 58) that of the two forms of the ♀, one with the band pure white and the other ochreous-white, the latter is characteristic of Chattenden specimens.

FIRST RECORD, 1773: "The *Butterfly* . . . may be taken . . . about Westram [Westerham] in Kent" (Wilkes, *120 Copper-plates of English Moths and Butterflies*, 63).

- ¹These releases were sponsored by the "Protection Committee" of the R.E.S. and referred to (in *Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 64) as an attempted introduction "into a Kentish woodland where it had formerly occurred".
- ²D. F. Owen (*in litt.*) says he "almost certainly" saw an imago there in 1946 and possibly another on June 29, 1947.
- ³Frohawk (*Nat. Hist. Brit. Butts.*, 1: 173, *Entomologist*, 58: 145) asserts that he himself saw the last *iris* at Chattenden in 1886 or 1887. Later (*Entomologist*, 76: 63) he implied that he last saw it there in 1888.

***Limenitis camilla* L.: White Admiral.**

Native. Woods¹; on *Lonicera periclymenum*. Found in divisions 1, 3, 5-8, 10-14, 16; casually in 4, 9.

During the past thirty years, *camilla* has spread from the west over most of Kent, and reached its widest distribution about 1945, since when it has occurred in varying numbers in probably most if not every suitable stretch of woodland in the county, but has been seemingly less plentiful since 1954.

In 1942, two imagines were noted at Trench Woods, Tonbridge, as early as June 14 (J. S. Wachter). In 1947, it was plentiful at Joydens Wood on June 21, and a single perfectly fresh but rather small specimen was seen there on September 8 that year, probably one of a partial second brood (D. F. Owen).

18th and 19th Century Occurrence.—From the few mostly brief records of pre. 1900 occurrence, it may be gathered that the species was not uncommon in Kent at the end of the 18th century, but decreased considerably during the first half of the 19th century, and by 1860 had become extinct throughout the greater part of the county.

The earliest reference to *camilla* in Kent is by Petiver (*Papilionum Britanniae*, 1), who gives West Wickham as a locality. There then follows a gap in the records of some 80 years until 1795, about which time the butterfly was fairly common in Kent, judging by the statement of Lewin (*Insects of Great Britain*, 18)—who resided at Darenth—that it "is an inhabitant of almost every patch of wood in England".

In 1819, Samouelle (*Entomologist's Useful Compendium*, 240) recorded that he had observed it in tolerable abundance at Birch Wood (div. 1); but in 1827, Stephens (*Haust.*, 1: 53) stated that though formerly "very abundant" at this locality, it had not been captured there for "many years".

In North Kent, Crozier (*Ent. week. Int.*, 2: 132) took it in woods "near Chatham" [Chattenden] in July 1857; and Chaney (1884-87) observed that it was not uncommon at Chattenden Roughs (div. 6a) up to 1858, but that he had not heard of it being taken there since. Walker (*Ent. Rec.*, 10: 103) said it was fairly common at Chattenden up to 1859 but owing to the "terribly cold and damp summer of 1860" it vanished suddenly and was never seen there again.

It was noted in 1856 as having occurred in the Weald at Tenterden (div. 14) (*Stainton, Man.*, 1: 34); and there is an interesting record by Howell (*Ent. Rec.*, 3: 63) that it was seen at Sissinghurst (also in div. 14) in 1891, thus indicating its continuance in this area until long after it had ceased to exist almost everywhere else.

These constitute all records for this period; and there is little doubt that at the close of the 19th century the species had become extinct in Kent except perhaps in one or two areas only.

1900-1924.—The only information that I have of its occurrence during this time that is at all circumstantial², was communicated to me by the late J. Shepherd of Herne Bay. Shepherd told me that in Blean Woods (div. 3), a few specimens had been seen there nearly every year from the time he went to live in the district in 1911, until the "Great Migration", as he called it; and added that he believed there had always been a few in the area, and, furthermore, that none had been released to his knowledge (C.-H.).

[(In 1907 and 1908, a "considerable number" were liberated by E. Goodwin in woods around Watlington (div. 11); "they didn't take on and no larvae were ever discovered" (Purefoy, *Entomologist*, **74**: 119). "A dozen or more butterflies from New Forest larvae liberated c. 1900 in Mereworth Woods" (H. S. Fremlin, *in litt.*) probably refers to Goodwin's releases (C.-H.).]

1925-1937.—About 1930, *camilla* began to appear in many wooded areas in Kent, resulting from extension of range from the west.

It would seem that the new arrivals first appeared in 1925, when a few imagines were seen and taken by A. A. Allen near Headcorn (div. 11) (C.-H.); and in the same year one was seen in Ashford and reported by A. H. Wood (Scott (1936)). In 1926, a single example was observed at Shadoxhurst (div. 12) (Bull, *Diary*); and in 1927, several specimens were seen and one taken by S. Francis in a wood near Canterbury (Busbridge, *Entomologist*, **60**: 226). [In 1927, it was also seen in some numbers "near Limsfield" (Robbins, *Lond. Nat.*, 1927: 36). Note: Limsfield itself is in Surrey, and is situated only two miles from the county boundary of div. 10.]

In 1928, the butterfly began to appear commonly at Brasted (div. 10) (R. M. Prideaux); it made its first appearance near Hythe (div. 16) in 1929, and in 1930 was seen at Reinden Wood (div. 8) (Morley (1931)), at Ham Street (Bull, *Diary*), and at Canterbury (Stephen Jones, *Entomologist*, **65**: 260). It was observed at Gillingham (div. 7) in 1931-32 (Jones, *Entomologist*, **66**: 75) and in 1932 was noted for the first time in the Dover district at St. Radigund's (div. 8) (E. & Y. (1949), also at Eynsford (div. 6) (Jacobs, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1932-33: 89), at Trenley Park (div. 3) (C.-H.), and again at Canterbury, but stated to be not as common there as in the Ashford district (Busbridge, *Entomologist*, **65**: 203; Stephen Jones, *loc. cit.*).

In 1933, in addition to some of the localities mentioned above, it was recorded from Cranbrook (div. 14) (Bull, *Diary*), Covert Wood (div. 8) (W. E. Busbridge), Folkestone (div. 16) (A. M. Morley); and in 1934 from Hartley (div. 6) (Welch, *Entomologist*, **67**: 210), Watlington (div. 11), where at least 200 specimens were seen (Purefoy, *Entomologist*, **74**: 119), also at Gillingham, where 60-70 were seen and where it had been noted as steadily increasing annually since 1931 (Jones, *Entomologist*, **68**: 45).

By 1935, *camilla* was established and locally plentiful in many wooded areas in the county, but had so far apparently not reached the Hoo Peninsular nor much of N.W. Kent, being notably absent from div. 1 as well as perhaps from 5 and all sections of 6a.

About this time, reports show that in some districts the butterfly had reached culmination point, and that its numbers had begun to decrease³. Thus, R. M. Prideaux (*in litt.*, 4.ii.1950) wrote that at Brasted, it

reached its peak in 1935, and had been less common ever since; and Purefoy (*loc. cit.*), writing in 1941, stated that at Watlingtonbury, it decreased appreciably in 1935 owing to the severe mid-May frost that year. Morris (*Entomologist*, **69**: 238) discovered that at Kemberland, Broad Oak (div. 3), during 1936-37, depletion was partly due to the effect of storms during the larval period. His findings showed that on September 2, 1936, of 96 'seats' located over a distance of some 40 yards, 70 were tenanted, the remaining 26 being vacant, thus giving a wastage of 26.5%, the cause of which was not ascertained. The following April, however, after a particularly stormy winter, the mortality was found to be very heavy—as high as 33%—and considerably higher where the position was at all exposed towards the outskirts of the breeding areas.

1937-1947.—During this decade *camilla* showed a marked increase and a notable spread into new areas. Thus, in 1937, it was seen at Southfleet (in the north of div 6) (Cox, *teste* F. T. Grant), and in 1938 and 1939 was observed in numbers at Chattenden (F. T. Grant), its first appearance to our knowledge in div. 6A during the present century.

In the extreme north-east of the county one was seen by L. W. Wilson, c. 1941, settled on a creeper at the Sea Bathing Hospital, Margate (the only record for div. 9), from which the nearest woods are some ten miles away (C.-H.).

On July 1, 1945, a single specimen was seen at Petts Wood (S. F. P. Blyth), the first appearance in div. 1 to our knowledge for over a century; and in the following year and subsequently, it was reported from other localities in this division. Thus, in 1946, it occurred at Chislehurst (Browning, in de Worms, *Lond. Nat.*, 1949: 67); at Elmstead Woods, and in small numbers at Joydens Wood and Hayes Common (D. F. Owen, *in litt.*, 2.v.1947). In 1947, in addition to the above localities, it was noted at West Wickham (C.-H.), commonly at Keston, and between June 21 and 24 "scores of males could be seen on bramble blossom at Joydens Wood" (D. F. Owen).

In 1948, one was seen in the extreme north-west close to the border of the metropolis at Bostall Woods (div. 1); it was seen at Downe (the first record for div. 5); and elsewhere in N.W. Kent was noted as still generally increasing (D. F. Owen). One was seen at Cobham Park (div. 6a) (F. T. Grant).

1949-1960.—During this period and particularly since 1954, *camilla* has been generally rather less plentiful than of late.

In the north-west it occurred singly at Abbey Wood, June 1949 (Showler, *Ent. Rec.*, **68**: 127), July 7, 1949 (A. H. Heselden); and was observed at Well Wood, 1950 (C.-H.); and at Farningham Woods, 1952 (A. H. Heselden); all in div. 1. In div. 5, noted at Lullingstone, 1950, a few 1951, and in 1952 abundant June 2, July 6 (A. H. Heselden). In div. 6, mostly seen singly:—At Fawkham, 1948; Hartley, 1952 (G. G. E. Scudder); Magpie Bottom (Burton, *Ent. Rec.*, **65**: 297); Shoreham (Warrier, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1949-50: 76); and in 6a, three were seen at Darenth, July 19, 1950 (A. H. Heselden). Note:—By contrast, in 1947 it was plentiful in both these divisions (Owen, in de Worms, *Lond. Nat.*, 1949: 67).

In North Kent, in div. 7, it is given as occurring at Westwell (Scott (1950)); very few were seen in 1948 at Walderslade and Nashenden Woods (L. N. Tesch); and only two at Boxley, in 1953 (A. H. Harbottle).

Further east, in div. 3, it persists in fair numbers in Blean Woods, where I have seen imagines from time to time since 1950, and in 1955 took larvae (C.-H.).

In East Kent, in div. 8, A. M. Morley (*in litt.*, 27.i.1954) writes that it continues to exist at Reinden Wood in small numbers; and E. & Y. (1949) state that it is found in all the woods in the Dover and Deal district. In 1950, it was seen at Haddling Wood (C.-H.), but in 1952, Gummer (*Entomologist*, **86**: 31) failed to find it there, though he had seen it in good numbers previously. In 1950, a single specimen was observed fluttering along a garden path at Sandwich on July 28 (D. F. Harle), clearly a stray and the only record to our knowledge for div. 4.

In West Kent and the Weald, the species persists in varying numbers in divisions 11-14, but is apparently nowhere abundant. In 11, it has occurred regularly at Hoads Wood, and was fairly numerous there in 1958 (C.-H.); severally at Sevenoaks Weald, July 7-22, 1959 (E. A. Sadler); also observed at Dering Wood (B. G. Chatfield) and Marden (W. V. D. Bolt). In 13, noted at Badgers Oak, Frith Wood, Goudhurst, and apparently increasing at Bedgebury (B. G. Chatfield, *in litt.*, 1954); also reported from Tunbridge Wells Common, 1953 (A. Grasse-mann, *fide* C. A. Stace). W. V. D. Bolt (*in litt.*, 1960), writes that it is scarce and "getting scarcer" in the woods around Goudhurst. In 14, singletons were seen at Iden Green, Eaglesden, and Dingledden (R. S. White); it was also observed at Hawkhurst, 1955 (C.-H.), 1956 (A. Lawson), and found throughout this area by B. G. Chatfield (*in litt.*, 1954). In 12, I have seen it from time to time about Ham Street, both in Orlestone Woods and at Carters Wood (C.-H.).

VARIATION.—As an indication of how seldom this species varies, J. Shepherd told me that c. 1936 he bred some 800 *camilla* from about 1000 larvae collected in Blean Woods during the winter, and that not one aberration resulted. Incidentally, they were all taken back and released, which he said was more trouble than collecting them (C.-H.).

At Kemberland, July 13, 1937, I took a ♀ ab. *obliterae* Robs. & Gard.; in this the white markings are much reduced, the example appearing transitional to ab. *nigrina* Weymer. A similar specimen labelled "Wateringbury, July, 1934, is in Goodwin coll. (C.-H.).

The following may be referable to ab. *nigrina* Weymer, which is described as uniformly black without any markings:—Trench Woods (div. 11), one taken, July 9, 1942 (J. S. Wachter MS.). (Perhaps the same as that mentioned in Given (1946)). Blean Woods, "J. Shepherd and Dr. Twigg saw two complete *nigrina* and took one worn one" (A. J. L. Bowes).

FIRST RECORD, 1717: "Wickham [West Wickham] near Croydon" (Petiver, *Papilionum Britanniae*, 1).

¹In the Blean area, Morris (*Diary*) found that the favourite breeding sites were amongst underwood of mature growth, but not too thick on the ground and where sunshine could filter through easily without being too dominant. In the vicinity of rides seemed to be the most favoured spots, and loose trailing sprays of honeysuckle at a height of from two to three feet, where these were well secured to ample support in the nature of substantial undergrowth.

²In 1914 or thereabouts, Frohawk (*Nat. Hist. Brit. Butts.*, **1**: 166) included Kent among the list of counties wherein it still occurred, but gave no particulars.

³It may be of interest to draw attention here to a factor of local consequence, namely the system of rotation cutting of woods adopted in parts of Kent which though highly beneficial to certain butterflies, must have a very deleterious effect upon local populations of *L. camilla*, owing to this species' micro-habitat requirement (C.-H.).

***Vanessa atalanta* L.: Red Admiral.**

Resident, reinforced by immigration.¹ Gardens, hedgebanks, waste places, etc., on *Urtica dioica*, *Parietaria diffusa*, *Humulus lupulus*, *Cirsium*. Recorded from all divisions.

The butterfly is fairly numerous most years, but occasionally scarce, as for example in 1949 at Pinden (div. 6) (E. J. Hare) and Brasted (div. 10) (R. M. Prideaux, *Entomologist*, **83**: 69); also at Catford (div. 1), where Russell (in *Wool. Surv.* (1909)) noted it as "common in 1899, rare since". Sometimes it has been known to be exceptionally plentiful, as was the case in 1877 (Miller, *Ent. mon. Mag.*, **14**: 141); 1892 (Kipping, *Entomologist*, **25**: 209); at Ebbsfleet (div. 4), June 17, 1920 (Gomm, *Diary*); and all over Romney Marshes in 1935 (Cockayne, *Lond. Nat.*, 1935: 68). In 1946, hundreds were seen on fine September days in Greenwich Park (div. 1) (D. F. Owen, *in litt.*); in 1947 it was in "great abundance" at Brasted (R. M. Prideaux); and A. A. Allen (*in litt.*) writes that at Blackheath (div. 1) there have been many more during the autumn of 1960 than of late years.

There are a number of cases of the butterfly having been seen very late or very early in the year, but comparatively few instances are known of actual discovery in a state of hibernation. At Orpington (div. 1), a ♀ *atalanta*, two *Nymphalis io* and two *Aglais urticae* were found clinging to woodwork under some slates of a house in February 1907; a ♀ *atalanta* was found in a thick hedge in January 1908; and a further ♀ was seen at rest under the eaves of a house in November 1908 (W. Barnes, *vide* Frohawk, *Entomologist*, **46**: 40-41). During the exceptionally cold winter of 1908-09, out of about 100 *atalanta* released for observation at East Farleigh (div. 11), there were only three survivors by the following April (E. B. Purefoy, *vide* Frohawk, *loc. cit.*).

The foregoing are the only instances of hibernation that we know of for certain in this species. The insect has, however, been noted on other occasions either very late or very early in the year, and it is probable that at least some of the following records refer to butterflies that had already undergone or were in the process of undergoing hibernation:—Darenth (div. 6a), November 15, 1857 (Harding, *Ent. week. Int.*, **3**: 69); Sidcup (div. 1), November 4, 1918, April 29, 1934 (Kidner, *Diary*); Bexley (div. 1), November 22, 1928 (Richards, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1928-29: 87); Holwood Park (div. 1), April 26, 1948 (D. F. Owen); West Wickham (div. 1), February 3, 1957 (French, *Entomologist*, **91**: 102); Folkestone, one, February 17, 1950 (Morley, *Entomologist*, **83**: 115); Pinden (div. 6), December 3, 1954 (French, *Entomologist*, **88**: 124).

There is some evidence that *atalanta* flies naturally by night; thus W. L. Rudland states that at Wye (div. 12), he found two imagines in an m.v. trap on September 27, 1953; and Buckstone (*Entomologist*, **60**:

16) records that at Elmers End (div. 1), it was taken at railway station lamps; in 1959 A. M. Morley twice found a ♀ in his m.v. trap at Folkestone, the first on September 19, the second on October 13.

The principal larval pabulum is Stinging Nettle (*U. dioica*). Wakely (*Ent. Rec.*, **66**: 109), however, records that in 1953, he found a few larvae at St. Margaret's at Cliff, on Pellitory-of-the-Wall (*P. diffusa*); and Buckstone (*Entomologist*, **53**: 62) says he found two larvae on Hayes Common (div. 1), in 1888, "feeding on a single head of thistle". H. C. Huggins (*in litt.*) writes that he reared two *atalanta*, c. 1913, out of three larvae taken feeding low down on hop (*H. lupus*); they were found at Dargate (div. 3) by the owner of a hop-garden of 8 acres, who refused to wash the hops, saying he relied "on the ladybirds and flies to kill the aphids".

VARIATION.—The following aberrations are in R.C.K.:—*eos* Fritsch, N. Kent. 1930, Folkestone, 1924; *ochrobrunnea* Fritsch, Bexley, bred, 1912; *fuscens* Lémpeke, Folkestone, 1920; *trans. ad pallida* Fritsch, Kent, C. Fenn coll.; *angustifasciata* Lémpeke, N. Kent, bred 1916, Folkestone, n.d.; *rubra* Fritsch, Erith, 1894; *fracta* Tutt, N. Kent, 1923, Folkestone, 1924; *bialbata* Cabeau, Halling, bred; *caerulocellata* Lempke, N. Kent, 1930; *flavescens* Fritsch, Folkestone, two bred, 1920 (probably the two recorded by Oliver in *Entomologist*, **53**: 283), Bexley Heath, 1933; *cabeauvensis* Lamb., Folkestone, 1924; *nana* Schultz, Dover, 1878. Underside:—*hyensis* Lamb., six, N. Kent, three, Folkestone. Also pathological examples from N. Kent, 1930; Folkestone, bred 1924; N. Kent, 1923.

A ♀, bred August 1899, by B. P. Kemp from a larva found at Erith (Frohawke, *Entomologist*, **33**: 101, plt. 3, fig. 2) is referable to the rare ab. *klemensiewiczii* Schille.

Adkin (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1920-21: 49) exhibited an ab., taken at Folkestone in 1876, in which the "usual red colouration had become yellow, and the spots of the marginal bands of the hindwings were absent"; and Tonge (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1915-16: 124) exhibited an ab. taken at Deal "with the base of the hindwings orange".

In Brit. Mus. (S. Kensington) are the following three aberrations:—Two dwarf specimens—one, from Strood, bred 1875; the other, alar expanse $1\frac{3}{4}$ ", taken Tunbridge Wells, 1914, recorded by Morgan (*Entomologist*, **48**: 150); an underside with broad red band, no spots on margin of hindwings, Dover, 1892, S. Webb coll.

Frohawke (*Nat. Hist. Brit. Butts.*, **1**: 164) records that on September 17, 1905, at Romney Marsh, he found full-grown larvae "of various colours, from almost wholly pale ochreous-whitish to entirely blackish".

FIRST RECORD, 1822: Between Gravesend and Cobham, September 4, 1822, "on the elms at Parrock and oaks on Randall Heath" (Arnold, *Robert Pocock*, 148).

¹Williams (*J. Animal Ecol.* **20** (2): 182-190) collected evidence strongly indicative of *atalanta* immigrating here from the Continent in spring and summer and emigrating there in late summer and autumn. He also gave information pointing to similar two-way movements in *Colias croceus* Fourc., *C. hyale* L., and *Aglaia urticae* L.

V. *cardui* L.: Painted Lady.

Immigrant. Pasture, flowery fields, waste places, etc.; on *Cirsium*

arvense, *C. acanthoides*, *C. vulgare*, *Malva sylvestris*, *Urtica dioica*, *Althaea officinalis*, [*Pulicaris dysenterica*, *Parietaria diffusa*, *Gnaphalium sylvaticum*, and Globe Artichoke]. Recorded from all divisions.

"Occurs in some seasons all over the county, but is generally most plentiful in clover and lucerne fields, especially near the coast" (V. C. H. (1908)). On the N.W. Kent marshes, Burton (*Lond. Nat.*, 1954: 57) states that the butterfly is particularly fond of river-walls, "especially where clumps of thistles are interspersed with patches of bare earth".

There is a visitation of *cardui* apparently every or almost every year¹, and in certain years it was noted as being abnormally plentiful, e.g. in 1856, 1879, 1883, 1892, 1894, 1902, 1903, 1908, 1912, 1927, 1928, 1947, and 1952. The butterfly is usually less numerous than either *Vanessa atalanta* L. or *Nymphalis io* L., and normally much less abundant than *Aglais urticae* L.

There is no evidence that the species ever survives our winter, and since it is now a recognised fact that it has no hibernation period, it follows that individuals observed in the spring are most probably immigrants. In 1952, the insect appeared as early as March 3, on which date several were noticed in North and East Kent (Riley, *Entomologist*, **85**: 95); and in 1946, one was seen in the Lewisham district as late as November 4 (D. F. Owen).

The butterfly is frequently associated with *Plusia gamma* L. in migratory movements, and has been similarly associated, though to a lesser degree, with certain other Lepidoptera, notably *V. atalanta*, *C. croceus*, and the Pyrale *Nomophila noctuella* Schiff. During the unprecedented invasion of *cardui* in March 1952, its arrival in Kent was correlated with such interesting species as *Celerio livornica* Esp., *Heliothis peltigera* Schiff., *Laphygma exigua* Hübn., *Plusia ni* Hübn., as well as possibly *Tathorhynchus exsiccata* Led.; and at Stodmarsh (div. 4), D. F. Harle (*in litt.*) writes that its arrival there on March 4 that year coincided with the arrival the same day of the earliest recorded Sand Martin—a remarkable event.

Like *V. atalanta*, there are indications that *cardui* is not only crepuscular by habit, but occasionally flies well into the night; and in this respect, Buckstone (*Entomologist*, **60**: 16) records that at Cudham (div. 5), on an exceptionally hot summer's night, he once came across a number of *cardui* flying about yew trees in the bright moonlight.

The principal foodplant is thistle (*Cirsium* spp.); and in 1946, in the Lewisham district, D. F. Owen records that they were abundant on both this and Stinging Nettle (*U. dioica*). It has been found exceptionally on Common Mallow (*M. sylvestris*), at Folkestone (Knaggs, *teste* Barrett, *Br. Lep.*, **1**: 151); and on September 10, 1955, I took a full-grown example on Romney Marsh (div. 15) feeding on Marsh Mallow (*A. officinalis*), from which the imago emerged by incubation on October 14 (C.-H.). [The larva has also been recorded as having been found [in Kent] on the following:—Pellitory-of-the-Wall (*P. diffusa*)², Globe Artichoke foliage (Theobald, *Entomologist*, **61**: 234); Wood Cudweed (*G. sylvaticum*) (Cox, *Proc. ent. Soc. Lond.*, 1863: 189); and Fleabane (*P. dysenterica*) (Morgan, *Lepidoptera of Tunbridge Wells* MS.).]

VARIATION.—In the Brit. Mus. (S. Kensington) is a specimen labelled as *ab. elymi* Ramb., with data: "Capt'd. Dover, September, 1872, ex.

S Stevens coll." (this is the example recorded and figured by Newman in *Entomologist*, 6: 344). A similar specimen, though perhaps not quite so extreme, was taken at Borough Green (div. 11), August 1939 (Thomas, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1952-53: 48, plt. 2, fig. 2); and likewise another, which was bred from a pupa found "spun up in thistle" near Brasted (div. 10), July 16, 1912 (Prideaux, *Entomologist*, 46: 326).

Sperring (*Proc. ent. nat. Hist. Soc.*, 1920-21: 81) exhibited two ♀♀ underside abs. bred 1920, from Bexley pupae, one in which "the usual underside fulvous colouration is replaced with deep olive brown"; and Buckstone (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1931-32: 99) exhibited two "sandy coloured specimens" bred Herne Bay, 1931, one being undersized with smoky hindwings, some spots striated, and zigzag line on disc absent.

In the F. A. Small coll. is a very pale specimen, labelled "Canterbury district, October 6, 1910, F. A. S." (C.-H.).

The following aberrations are in R.C.K.:—*semisuffusa* Cockerell, N. Kent, 1933; *sexiespupillata* Verity, Broadstairs, 1928; *priameis* Schultz, Eynsford, bred, 1922; *emielymi* Vty., Folkestone, 1922; *varini* Meilhan, Canterbury, bred August 7, 1909; *rogeri* Meilhan, Folkestone, 1872, taken by W. Austen (Frohawk, *Vars. Brit. Butts.*, plt. 21, as *inornata* Brams.). Underside: *infraochrea* Vty. (*nom. nud.*), Wateringbury. Also a pathological example, N. Kent, 1928; and one with "hindwing symmetrically marked with forewing colouring", N. Kent, bred December 1928.

FIRST RECORD, 1811: Gravesend, October 11, 1811 (Arnold, *Robert Pocock*, 50).

¹My records show that it has occurred every year in Kent from 1930 to 1960 inclusive, but that it was perhaps absent in 1929 (C.-H.).

²Harding (*Ent. week. Int.*, 4: 125) stated that *cardui* larvae were swarming on this at Deal in 1858; but Newman (*Zoologist*, 6212) says that Harding was mistaken and that they were *V. atalanta*.

[(*V. huntera* F.: Scarce Lady.

Doubtfully genuine¹.

In Glendining's catalogue of the sale on November 16, 1943, of the first portion of the Whitehouse coll., one finds at p. 5, under lot 52:—"Huntera. A very rare migrant . . . taken by Mr. K. Watson, near Dover, Kent, on July 16th, 1886".)]

¹But the fact that *huntera* has been known to migrate in the U.S.A. in company with *Danaus plexippus* L. (cf. Williams, *Migration of Butterflies*, 225), and that 1886 was an exceptional year for the appearance of *plexippus* in Britain, may have some purport in the present case.

Nymphalis io L.: Peacock.

Resident, perhaps native. Flowery fields, gardens, waysides, waste places, etc.; on *Urtica dioica*, *Humulus lupulus*. Recorded from all divisions, except 15.

The butterfly is usually fairly numerous most years, but apparently underwent a period of scarcity from about 1890-1910. Thus, in 1899, Walker (*Ent. mon. Mag.*, 35: 236) states that in Sheppey, though formerly one of the commonest butterflies, it was quite rare for some

years past, adding that not one had been observed in any stage to his knowledge; Barrett (*Entomologist*, 34: 318), writing in 1901, noted that it was always scarce in Thanet and in that year there were none; and Morgan (in Knipe (1916)), referring to the Tunbridge Wells district, said that though formerly abundant, it had for many years past been almost absent, but had lately appeared in some numbers. Finally, V C. H. (1908), in a general assessment of its status for the whole county, gives it as "formerly an abundant species and generally distributed, but it has for many years past been gradually disappearing and has become in many places a comparatively scarce species".

Occasionally, the butterfly has been noted as being extremely abundant. Thus, on one day in April 1843, it was seen in hundreds between Footscray and Shooter's Hill (div. 1) (Douglas, *Zoologist*, 177); in 1893, it was exceedingly abundant at Chattenden (Kipping, *Entomologist*, 25: 209); also in a clover field at Broad Oak, in September 1936 (C.-H.); in July 24, 1947, seventy were counted on privet flowers in Joydens Wood (div. 1) (D. F. Owen); and on April 19, 1952, over 100 were seen flying about the Dartford and Stone Marshes (div. 2) (Burton, *Ent. Rec.*, 65: 19).

Jacobs (*Ent. Rec.*, 69: 75) records that he saw the insect flying in the afternoon sun in his garden at Bromley on February 3, 1957; and Weir (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1893: 102) reported its capture at Sevenoaks on February 19, 1893. Doubtless both instances of the butterfly having been tempted out of hibernation by exceptionally mild weather.

The normal foodplant for this species is Stinging Nettle (*U. dioica*). H. C. Huggings (*in litt.*) writes that he has several times seen the larva "feeding on hops run wild straggling low on hedges in both Faversham and Sittingbourne areas", between 1913 and 1927.

VARIATION.—The following aberrations are in R.C.K.:—*clara-violacea* Reuss, Ash, 1945; *brunnea* Reuss, N. Kent, 1929; *splendens* Reuss, N. Kent, 1924; *lucidocellata* Reuss, N. Kent, 1921, 1924; *viridiocellata* Reuss, Folkestone; *nigriocellata* Reuss, N. Kent, 1928; *semiocellata* Frohawk, Bayham Abbey, Kent, 1908. Also an example of homoeosis, bred Bexley, 1937.

The rare ab. *belisaria* Ob. has been "bred from a Kent larva", and was exhibited by Rait-Smith (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1924-25: 124).

Showler (*Entomologist*, 86: 107) records that in 1947 he bred a ♂ ab. *exoculata* Weymer, among a brood of about eighty normal *io*, from ova obtained from a North Kent ♀, and added that rearing conditions were normal.

Joy (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1886: 29) exhibited "a sub-diaphanous variety" from Folkestone; and I have several apparently similar specimens from Sandhurst, that were bred by the late G. V. Bull in 1929 (C.-H.).

The aberration in which there appears a simple blue spot below the ocellus of the hindwing, *dyophtalmica* Garb. (= *cyanosticta* Raynor), is not uncommon. It has been recorded by Shaw (*Proc. Cy. Lond. ent. nat. Hist. Soc.*, 1910: 16; 1911: 5); and I have several from various localities, both captured and bred specimens (C.-H.).

Crabtree (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1937-38: 21) exhibited an ab. bred by W. Austen, Folkstone, 1906, and described as "intense

black extending along costa and hindmargin of left forewing, virtually eliminating eyespot"; and Sperring (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1920-21: 80-81) exhibited an ab., Folkestone, 1914, "with the yellow ground of ocelli on forewing replaced with dark buff and blue-grey, instead of the usual metallic blue".

Adkin (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1916-17: 49) exhibited one from Chattenden, 1868, with alar expanse only 47 mm.; and a specimen having the half crescent on the left forewing nearest the base split up into a number of spots, was bred in 1938 under normal conditions, among some 200 typical *io* from larvae collected at Broad Oak (C.-H.).

FIRST RECORD, 1831: Dover (Bree, *Mag. Nat. Hist.*, 5: 334).

N. antiopa L.: Camberwell Beauty.

Immigrant¹. Orchards, gardens, etc. Recorded from all divisions.

Note:—As there is no authentic record of any of the early stages of *antiopa* in nature anywhere in Britain, and the species does not pair until the spring, it is presumed that the butterfly only migrates here in late summer, and that the few adults that survive our winter are so scattered that they fail to find a mate.

From the year it was first noticed in Kent in 1789 until 1925, approximately 120 specimens of *antiopa* have been noted in the county. From time to time, however, since 1926, numbers have been imported and purposely liberated² with the result that for the past thirty years or more, much of the recording of this species has been rendered worthless.

Probably the greatest number of genuine immigrant *antiopa* ever seen in Kent in any one season was in 1872³, when between August 24 and November 26 about thirty-five specimens were recorded from localities scattered throughout the county. The fact that in the late summer of that year, both *Pontia daplidice* L. and *Argynnis lathonia* L. also appeared in Kent in exceptional numbers, is of particular interest.

Early History.—The earliest reference to *antiopa* in Kent is that of Lewin (*Insects of Great Britain*, 6) who observes:—"The middle of August, 1789, I was surprised with the sight of two of these elegant flies, near Faversham in Kent; one of which I thought it great good fortune to take; but in the course of the week I was more agreeably surprised with seeing and taking numbers of them in the most perfect condition. One of my sons found an old decoy pond of large extent, surrounded with willow and sallow trees, and a great number of these butterflies flying about and at rest on the trees".

The next occurrence to our knowledge is of one seen by Miss Harvey, which was settled on a wall at Upper Deal, in August (1831) (Bree, *Mag. Nat. Hist.*, 5: 336). This is followed by the record of one taken by Thomas Price at Shoreham [c. 1839] (Newman, *Zoologist*, 945); and at the meeting of the Entomological Society of London on November 2, 1846, J. F. Stephens mentioned the "abundant occurrence" of *antiopa* at Tunbridge Wells, in the autumn of that year (*Proc. ent. Soc. Lond.*, 1846: 158). On April 2, 1848, it was seen at Penge (Douglas, *Zoologist*, 2150); in 1856 at Ashford (Russell, *Substitute*, 196); and Stainton (*Man.*, 1: 39), writing in 1856, stated that it had occurred at Ramsgate.

The following is a chronological account of its subsequent occurrence

in Kent until 1925, and unless stated to the contrary, it may be assumed that each record refers to a single specimen observed in late summer or autumn.

1860--1925.—1860-75: Three taken in or near Mereworth (H. S. Fremlin). 1865: Rolvenden (Mitford, *Ent. mon. Mag.*, 2: 132). 1870: Delce, near Rochester (Fletcher, *Entomologist*, 5: 170). 1871: Near Sevenoaks, April 22 (Harris, *Entomologist*, 5: 317).

1872: Near Erith (Wood, *Ent. mon. Mag.*, 9: 108). Lewisham (Stainton, *Ent. mon. Mag.*, 9: 107). Canterbury, one taken, three seen (Parry, *Entomologist*, 6: 216). Folkestone, ♀, in B. W. Adkin coll. sale, taken by W. Purdey, August 25 (A. M. Morley). Folkestone Warren (Ullyett, *Ent. mon. Mag.*, 9: 111); one, on a *cossus* infected tree (Lewis, *Ent. mon. Mag.*, 9: 109). Dover, three (Gray, *Ent. mon. Mag.*, 9: 111). Tunbridge Wells, two (Tindall, *Entomologist*, 6: 193); ♀, ♂ (Burney, *Ent. mon. Mag.*, 9: 110); one (Seabright, *Entomologist*, 6: 216). Dartford, several; Dartford Marshes, two (Bird, *Entomologist*, 6: 216). Darenth Wood, two (Priest, *Entomologist*, 6: 216). Faversham (Skelton, *Entomologist*, 6: 216). Near Herne (Butler, *Ent. mon. Mag.*, 9: 108). Near Eltham, two or three (Jones, *Ent. mon. Mag.*, 9: 109, 138; *Entomologist*, 48: 220). Near Rochester (Farn, *Entomologist*, 6: 193). Chattenden; Rochester; Strood; and elsewhere in the district (Walker, *Ent. Rec.*, 10: 102). Westerham; Sevenoaks (Smith, *Entomologist*, 6: 285).

1873: Folkestone, one, April 2 (Briggs, *Ent. mon. Mag.*, 9: 290). Watersend, near Dover (Gray, *Entomologist*, 6: 513). Near Tonbridge (Ash, *Entomologist*, 6: 545). 1875: Wye (Majendie, *Entomologist*, 8: 197). 1880: Gravesend (Woodford, *Entomologist*, 13: 277). Folkestone (Purdey, *Entomologist*, 13: 217). Headcorn (Stuart, *Ent. mon. Mag.*, 17: 113). Herne Bay, at sugar (McCaul, *Ent. mon. Mag.*, 17: 113). Tonbridge (Thomson, *Ent. mon. Mag.*, 17: 113). Knowlton; Fredville; both near Wingham (Hammond, *Entomologist*, 13: 277). Greewich⁴ (Russell, *Entomologist*, 13: 278). Alkham (Webb, *Ent. mon. Mag.*, 24: 131). Margate (Barrett, *Naturalist, Lond.*, 6: 42). 1880 or 1881: Near Mereworth (H. S. Fremlin). 1881: Dartford, April 1 (Sabine, *Entomologist*, 14: 210). 1883: Sandgate, one by W. Evans, at sale of Briggs Coll. (A. M. Morley). 1888: Chatham (Frohawk, *Entomologist*, 21: 254). Dover (Parsons, *The Times*, December 8, 1954, p. 9). Folkestone Warren (Barker, *Entomologist*, 21: 255). Margate (Stanley, *Entomologist*, 21: 255). Near New Brompton (Tyrer, *Entomologist*, 22: 46). Near Sevenoaks (Rogers, *Entomologist*, 21: 273). 1889: Hunton, near Yalding; Maidstone; both specimens in Maidstone Mus. (Reid, *S.E. Nat.*, 1904: 48)⁵. Horton Kirby, ♀, May 5 (Hale, *Entomologist*, 22: 160). Ramsgate neighbourhood (Willson, *Entomologist*, 23: 139). Beckenham (Saunders, *Ent. mon. Mag.*, 25: 429). Dover district, several (Webb (1891)). 1890: Southborough, near Tunbridge Wells (Fenn, *Diary*, September 29, 1890). Dover district (Webb (1891)). 1893: Hythe (Hill, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1893: 59). 1897: Keston (W. Barnes, in *Wool. Surv.*). 1898: East Farleigh (Goodwin, *Entomologist*, 31: 243). (1899): Dover district, "almost annually captured" (Webb (1899)). 1899: "Kent" [Dover] (Abbott, *Ent. Rec.*, 11: 278). 1900: Beckenham (Thompson, *Entomologist*, 33: 304). Bexley (Andrews, *Entomologist*, 33: 268). Herne (Single, *Entomologist*, 33: 267). 1901: Lee (Browne, *Entomologist*, 34: 254). Eltham (Jones,

Ent. mon. Mag., **37**: 257). Maidstone (Walker, *Ent. mon. Mag.*, **37**: 257). N.d.: Near Watlingtonbury, two seen at various times by E. Goodwin (Reid, *S.E. Nat.*, 1904: 48). 1904: Dymchurch (Mackintosh, *The Field*, August 6, 1904). 1905: Folkestone Warren (Butler, *Ent. Rec.*, **17**: 273)⁶. Ash, near Sandwich (Willson, *Ent. mon. Mag.*, **41**: 260). 1906: Swalecliffe (Cockayne, *Ent. Rec.*, **33**: 206). 1908: Folkestone Golf Course, taken by Hills (Walton, *Folkestone and the Country Around*)⁷. 1909: Paddock Wood (Frohawke, *Entomologist*, **42**: 260). 1911: Chelsfield (Smith, *Entomologist*, **45**: 209). Folkestone Golf Course, "settled on a *cossus*-infected ash" (Hill, *Ent. Rec.*, **23**: 305; Newman, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1911: 14). 1912: Folkestone Warren, one seen in February by Yunge-Bateman (A. M. Morley). 1915: Marden, one, May (Smith, *Entomologist*, **48**: 169). N.d.: Quarry Hill, Tonbridge, R. H. Ratray (Knipe (1916)). 1916: Near Canterbury (Frohawke, *Entomologist*, **50**: 18). 1922: Bromley (Jones, *Ent. mon. Mag.*, **59**: 203). 1923: Bromley (Jones, *loc. cit.*).

[1926-1938.—Because of releases made during this interval, all records for the period are suspect and have accordingly been placed within the reservation of square-brackets (C.-H.).

1926: Faversham (H. C. Huggins). Folkestone Warren, one seen by Yunge-Bateman, March 17 (A. M. Morley). 1928 or 1929: Folkestone Downs (*vide* A. M. Morley). 1929: Beckenham (Frohawke, *Entomologist*, **63**: 14). Blean Woods (Shepherd, *Entomologist*, **63**: 65). 1930: Folkestone (Morley, *Entomologist*, **64**: 111). 1933: Watlingtonbury (Frohawke, *Entomologist*, **66**: 129). 1935: St. Peter's, March 11, in a letter-box (Frohawke, *Entomologist*, **68**: 141). c. 1936: Marchants Wood, Hawkhurst, one seen by A. E. Rogers (B. G. Chatfield). 1938: Hythe (Joy, *Entomologist*, **72**: 246); one other seen (*vide* A. M. Morley).]

1939-1954.—I have no knowledge of any releases having been made during this period (C.-H.). 1939: Tankerton (Atkinson, *Entomologist*, **72**: 231). Folkestone, September 21 (E. D. Bostock, *vide* A. M. Morley). Hythe, one seen, August (*vide* A. M. Morley). 1940: Tankerton (Atkinson, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1940-41: 23). Tunbridge Wells, March 31 (Fuller, *Entomologist*, **73**: 109). 1942: Hawkhurst (Bull, *Entomologist*, **75**: 247). 1945: Dunkirk (Wade, *Entomologist*, **78**: 172). 1946: Littlebourne, April 2 (Batchelor, *Entomologist*, **80**: 12). Biggin Hill, ♂, mid May; Challock, May 23; Hythe; Folkestone (Dannreuther, *Entomologist*, **80**: 138). Dover (E. & Y. (1949)). St. Peter's, in a greenhouse (Hunt, *Rep. Thanet Fld Cl.*, 1948: 23). 1947: St. Margaret's Bay (Molesworth, *Entomologist*, **81**: 71).

Near Whitstable (Bowden, *Entomologist*, **81**: 106). Lords Wood, at rotting apples (E. J. Hare). Whitstable (Turner, *Entomologist*, **80**: 260). 1948: Farnborough Park, March 26 (*Bromley Mercury*, April 3, 1948). [(Joydens Wood, Bexley, a pair taken *in cop.* by Mr. Wright, April 11 (*Country Life*, April 30, 1948, p. 888); proved to be an erroneous report (Dannreuther, *Entomologist*, **82**: 105)]. Hoads Wood, near Ashford, April 12 (Scott (1950)). Near Deal, April 26 (Gummer, *Entomologist*, **81**: 163). Near Devil's Kneeding Trough, Wye, May 17 (Rothamsted). Bearsted (Dannreuther, *Entomologist*, **82**: 105). 1950: Sevenoaks (Busbridge, *Entomologist*, **83**: 224). 1952: Walmer (French, *Entomologist*, **86**: 161).

[1955-1960.—The occurrence of *antiopa* during this period is suspect owing to releases. 1955: Folkestone, August 3 (French, *Entomologist*

89: 175); August 24 (Self, *Ent. Rec.*, 67: 275); August 31 (P. L. Scott, *vide* A. M. Morley). 1956: Near Rochester (French, *Entomologist*, 90: 233). 1959. Eynsford (Riley, *Entomologist*, 92: 184).]

VARIATION.—The records show that many *antiopa* taken in Kent and elsewhere in Britain have whitish borders, a form which occurs in Scandinavia but is apparently rare in Southern and Central Europe, where the border is normally yellow. According to Cockayne (*Ent. Rec.*, 33: 205-210), the white-bordered form is distinguishable from the yellow-bordered one by a scale defect that is probably hereditary.

FIRST RECORD, 1789: Near Faversham (Lewin, *Insects of Great Britain*, 6).

¹The species has actually been observed at sea, presumably migrating towards the Kentish coast, for in 1872, Hewitson (*Ent. mon. Mag.*, 9: 161) observed that "Once when Mr. Hancock and I were crossing from Boulogne, we saw a specimen of it mid-way in the Channel".

²Cf. *Entomologist*, 64: 116, 65: 261, 67: 239, 68: 257, 82: 106, 89: 247; *Ent. mon. Mag.*, 67: 239, 91: 206; *Ent. Rec.*, 71: 223.

³It is an interesting fact that in the same year, *antiopa* also occurred in extraordinary numbers in Holland, where it is usually extremely scarce (cf. Snellen, *Tijdschr. Ent.*, 16: lxxii).

⁴Charlton (V.C.H. (1908); Wool. Surv. (1909)) probably refers.

⁵These were probably the two in Maidstone Mus. referred to by Rowland-Brown (in *Entomologist*, 52: 277) as having been "taken at Maidstone in February, 1889". Unfortunately, however, I could not find any such specimens, and doubt if they still exist (C.-H.).

⁶Pickett (*Ent. Rec.*, 17: 337) suggested that this might have been an escape, as in 1905, he noticed in a shop window in Dover a row of *antiopa* for sale, marked: "Bred this season 4d each".

⁷This may have been the one recorded as having occurred in 1911, in which case it is probable that 1908 was given in error.

[**N. xanthomelas** Esp.: Eastern Tortoiseshell.

Vagrant?

Only one example of this species, which is a native of Central and Eastern Europe, is known to have occurred in Britain; but whether the specimen was a casual adventive or had been introduced in some way is indeterminable. It may be significant, however, that Rambring (*Opuscula Ent.*, 20: 209) recently recorded *xanthomelas* as new to Sweden, a specimen having been taken in the province of Sandham-maren in September 1954.

11. A ♀ in good condition was taken in July 2, 1953, and exhibited (McDermott, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1953-54: 35; *Entomologist*, 87: 266). Miss McDermott informed me that she took the specimen at Shipborne, and that a friend, Miss A. Grasemann, believes she saw another one there later the same day (C.-H.).]

N. polychloros L.: Large Tortoiseshell.

Suspected immigrant and temporary resident. Wood borders, lane sides, etc.; on Elm, Sallow, Wych Elm, Cherry, Apple, White Beam. Recorded from all divisions, though mainly from the eastern half of the county.

The butterfly has mainly occurred in small numbers, often as single specimens widely scattered. Occasionally, however, it is plentiful, as for instance in 1946-48, when it was numerous in many localities both in East and West Kent. There are periods in its history when it appears to be completely absent from the county, indeed the records

indicate that *polychloros* is not permanently resident in Kent, but that its status here is dependant upon immigration from abroad. (For a discussion and account of the history of *polychloros* in Kent, cf. Chalmers-Hunt and Owen, *Ent. Gaz.*, 4: 3-11; Chalmers-Hunt, *Ent. Gaz.*, 11: 111-112).

The larva has been mostly found on Elm. It has also been noted on Sallow, Wych Elm and Cultivated Cherry (Reid, *S.E. Nat.*, 1904: 5); and Theobald (*The Insect and Other Allied Pests of Orchard, Bush and Hothouse Fruits*, 186) states that in the Wye neighbourhood he often saw cherry trees, especially sour cherries, stripped by the larva of this species, and added that he once found a colony on Apple.

Early History.—The earliest published record of *polychloros* in Kent seems to be that of Stephens (*Haust.*, 1: 43), who wrote: "near Ramsgate, Deal and other parts of Kent . . . it likewise occurred during the past summer". Presumably this would have been in 1827.

In 1830, larvae were plentiful in Darenth Wood (Newman, *Br. Butts.*); it was recorded as very rare from near Dover in 1831 (Bree, *Mag. Nat. Hist.*, 5: 331); and in 1843, on one day in April, hundreds of this species, *N. io*, *Aglaia urticae*, and *Gonepteryx rhamni* were seen between Shooters Hill and Footscray (Douglas, *Zoologist*, 177).

1850-1909.—c. 1850: Pembury, common (Stainton, *Man.*, 1: 39). c. 1853: Knock Wood near Tenterden, common (Beale, *Diary*). 1856: Lewisham, very frequent in spring (Newman, *Br. Butts.*). Ramsgate, frequent (Powell, *Ent. week. Int.*, 1: 197). 1857: Near Chat-ham (Crozier, *Ent. week. Int.*, 2: 132). 1858: Darenth Wood, a few (Fisher, *Ent. week. Int.*, 4: 140). Herne Bay, pupae under ledges (McLachlan, *Ent. week. Int.*, 4: 126). 1859: Herne Bay, seventeen (Butler, *Ent. week. Int.*, 6: 188). Near Sydenham, common; Abbey Wood, four (Cox, *Ent. week. Int.*, 6: 139, 188). Between Woolwich and Plumstead, "took a brood of 200 larvae off elm" (Jones, in *Wool. Surv.* (1909)). c. 1860: Abundant at Faversham, Boughton and other places in Kent; the larvae on White Beam (*Sorbus aria*), Elm (*Ulmus*) and Goat Willow (*Salix saprea*) (Stowell, in Newman, *Br. Butts.*). 1860: Lee, April 29; Bexley, May 1 (Fenn, *Lepidoptera Data MS.*). 1868: Gravesend, larvae. "This butterfly seems to get scarcer every year" (Button, *Entomologist*, 4: 129). Pembury district (Cox, *Entomologist*, 4 (62) ii). 1869: Folkestone Warren (Knaggs, *Qtly. J. Folke-stone nat. Hist. Soc.*, 1869 (4), 81). Tonbridge, larvae (Raynor, in Newman, *Br. Butts.*). 1870: Margate district (Cox, *Entomologist*, 5: 166). 1874: Near Dartford, larva, June 27, A. H. Jones (Fenn, *Diary*). N. Kent [Chattenden] (Porritt, *Entomologist*, 7: 181). 1875: N.W. Kent, one (R. Adkin, in *Wool. Surv.* (1909)). Lee district, larva, June 14; Kingsdown district, one, August 1 (Fenn, *Diary*). N. Kent [Chattenden], pupae common (Porritt, *Entomologist*, 8: 219). c. 1875: Folkestone Warren, a few seen (Ullyett (1880)). 1877: Detling (Cave-Brown, *Entomologist*, 10: 162). 1878: N.W. Kent, one (R. Adkin, in *Wool. Surv.* (1909)). c. 1878: Gravesend (H. C. Huggins). c. 1880: Sydenham (Sellon, *Ent. Rec.*, 2: 163). 1882: Cranbrook (W. A. Cope). 1883: Dover district, rather scarce, but in 1883 it was commoner than usual (Hall, *Ent. mon. Mag.*, 24: 78). c. 1883: Mereworth, larvae on cherry (H. S. Fremlin). N.d.: Rochester district, common where elms abound (Chaney (1884-87)). c. 1885: Ramsgate neighbourhood (Willson,

Entomologist, **23**: 139). 1888: St. Margaret's Bay, one, August 25 (Fenn, *Diary*). 1890: Folkestone (Carpenter, *Ent. Rec.*, **1**: 207). c. 1890: Ebbsfleet (W. A. Cope). 1893: Chattenden, several seen June 17 (Fenn, *Diary*). 1896: Brockley (Manger, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1896: 56). (1898): Chatham district, "widely distributed but scarcely common, except in some years at Chattenden" (Walker, *Ent. Rec.*, **10**: 103). c.1898-1904: Gravesend district, generally distributed from about 1898 until about 1904 when it disappeared completely (H. C. Huggins). N.d.: Wye district, larvae frequent on cherry trees but not since 1904 (Theobald, *The Insect and Other Allied Pests of Orchard, Bush and Hothouse Fruits*, 186). 1900: "Folkestone, Dover, Shepherdswell, Wingham, Walmer and Deal, Sandwich, Margate, Canterbury, have all to my knowledge yielded specimens, and in most cases series, to net wielders" (Webb, *Entomologist*, **34**: 57). Sheppey (Fletcher, *Entomologist*, **34**: 72). Herne, three (Peachell, *Entomologist*, **33**: 304). Eastling near Faversham (Chitty, *Ent. mon. Mag.*, **36**: 238). Shoreham, pupae suspended from iron hurdles (Colthrup, *Entomologist*, **34**: 57). Lee (Carr, *Entomologist*, **34**: 253). 1901: Cranbrook (Marshall, *Entomologist*, **35**: 28). Thanet (Barrett, *Entomologist*, **34**: 319). 1902: Sevenoaks, April 2 (H. Symes *in litt.*). Woodnesborough, eight taken, August (H. W. Daltry *in litt.*). Chislehurst (S. F. P. Blyth). Canterbury, F. A. Small (R.C.K.). St. Paul's Cray Common (Carr, *Entomologist*, **35**: 144). Maidstone district (Golding, *Entomologist*, **36**: 72). Deal (Browne, *Entomologist*, **35**: 270). N.d.: Maidstone district, frequently common; Yalding, attracted to light (Reid, *S.E. Nat.*, 1904: 47). Beckenham; Kidbrook (West. *Ent. Rec.*, **18**: 142). Southborough, M. M. Phipps (Knipe (1916)). Hayes, rare (*Bromley List, per Wool. Surv.* (1909)). Bexley district, occasionally (L. W. Newman, in *Wool. Surv.* (1909)). 1906: Margate, one indoors, "this is the first *polychloros* I have seen in Margate in twenty-five years" (Barrett, *Entomologist*, **40**: 14). 1907: Toys Hill near Brasted (Prideaux, *Entomologist*, **80**: 67). St. Paul's Cray (C. Fenn, in *Wool. Surv.* (1909)). 1908: Capel near Tunbridge Wells (Knipe (1916)). (1909): Farnborough, scarce but increasing in numbers (W. Barnes, in *Wool. Surv.* (1909)).

1917-1945.—No *polychloros* were seen in Kent to our knowledge between 1909 and 1916, and presumably it was generally scarce subsequently to 1945, as most of the records for this period are of single examples only. 1917: Near Hollingbourne, one seen (H. C. Huggins). 1918: Blean Woods, one taken (J. Shepherd). Faversham (Robertson, *Entomologist*, **52**: 59). Sevenoaks, one inside a house (H. Symes). 1918-26: Near Hythe, taken annually in small numbers by J. and D. Saunders (A. M. Morley and J. Saunders). 1921: Near Herne, one taken (J. Shepherd). 1920-30: Common in the Ashford district, 1922 being an exceptionally good year (Scott (1936)). 1925: Folkestone Town, one, July (R. G. Warren). 1929: West Wickham, one (Sankey, *Kent J.*, **6**: 19).

Between 1930 and 1940 it became progressively scarcer in the Ashford district, but was seen at Ham Street, Westwell and Hoads Wood annually after hibernation. There are a few summer records for this area, namely single examples in 1931 and 1935 by A. M. Morley and one in 1932 by H. B. D. Kettlewell. At Folkestone, A. M. Morley says

that odd specimens were recorded most years at this time, but that it was not numerous until 1946 (Chalmers-Hunt and Owen, *loc. cit.*). Most of the other records until 1940 refer to single examples in widely scattered parts of Kent.

c. 1931: Ramsgate, two, one of which flew in from the sea (Eliot, *Entomologist*, **76**: 197). 1933: Broadstairs (Burkill, *Lond. Nat.*, 1933: 124). 1934: Edenbridge (F. D. Greenwood). Bexley (Newman, *Entomologist*, **67**: 219). [(Selsdon, Surrey, just over the W. Kent boundary (A. H. Owen)).] 1935: Dungeness, one found alive in the sea (Kettlewell, *Entomologist*, **76**: 83). Tunbridge Wells, April 1, A. H. C. Morse (T. Dannreuther, *in litt.*). 1936: Canterbury (J. S. Wachter). Near Waldershare, three (E. & Y. (1949)). 1939: Paddock Wood near Blean (S. Morris). Dover, two (B. O. C. Gardiner). 1940: Trottescliff, two seen (H. E. Hammond). Dover (B. O. C. Gardiner). 1941: Sevenoaks (Busbridge, *Entomologist*, **74**: 165). 1942: Near Dover (Lipscombe, *Entomologist*, **75**: 247). Broad Oak (Chalmers-Hunt, *Entomologist*, **76**: 17). Woodnesborough (D. F. Harle). Stelling Minnis, two; Tonbridge, one (J. S. Wachter). 1943: Margate, one (W. D. Bowden). 1944: Updown, one (D. Batchelor). 1945: Whitstable, one (D. G. Marsh). Folkestone, a few (A. M. Morley). Littlebourne, several (D. Batchelor). Bredhurst (Woodcock, *Rochester Nat.*, 1948: **6** (133), 3).

1946-1949.—From 1946-48 the butterfly was exceptionally numerous in Kent. In 1946, it was recorded as fairly common at Littlebourne and Sandwich; about eight were seen at Folkestone; three at Deal; and at Whitstable, P. F. Harris (*in litt.*) described it as "ubiquitous, cannot estimate numbers". It was also noted at Herne Bay; Bridge; Barham; Birchington; and further west at Wigmore; Goudhurst; Brasted; and in the extreme north-west at Lewisham.

In 1947, it occurred at Studdal; Haddling Wood; Deal; Folkestone; Cheriton; Whitstable; Herne Bay; Sandwich; Littlebourne; all localities in north-east Kent. It was also noted elsewhere in the county at Rochester; Bredhurst; Hayes; Chattenden; Lewisham; Sevenoaks; Keston; Goudhurst; and Fawkham.

In 1948, it was again present in many of the localities where it had occurred in 1946-47, and also appeared in numerous others, among which may be mentioned the following:—Farningham; Grove Park; Sandhurst; Hawkhurst; Orpington; Westerham; Shorncliffe; Tunbridge Wells, where it was reported as apparently extinct in Given (1946); and the Ashford district, where it was stated to be exceptionally common. To sum up, it may be said that in 1948, the butterfly was found throughout the county, though mainly in the east.

The species was much less plentiful in 1949. It was reported from Herne Bay, where five were seen; Haddling Wood near Dover; Ashford district; Burham Down; and at Farningham (Chalmers-Hunt and Owen, *loc. cit.*; Chalmers-Hunt, *Ent. Gaz.*, **11**: 111-112).

1950-1960.—After the comparative abundance of this butterfly during the preceding four years, it is interesting that in the eleven years that followed, there were altogether only 14 records for the whole county, and that for five of these years it was apparently absent.

1950: Goudhurst; Brook, two; Ham Street, several; Haddling Wood near Dover; Burham Down. 1951: Sandwich; St. Nicholas at Wade; Ham Street. 1952: Broadstairs; Ashford. 1953: Brook; Boxley.

1954-57: None. 1958: Westwell; Folkestone. 1959-60: None (Chalmers-Hunt and Owen, *loc. cit.*; Chalmers-Hunt, *Ent. Gaz.*, 11: 111-112).

VARIATION.—The only example of variation in this species known to me is a specimen of ab. *nigroflava* Biezanko in R.C.K., from Canterbury, F. Small, 1902 (C.-H.).

FIRST RECORD, 1827: Stephens, *Haust.*, 1: 41.

Aglais urticae L.: Small Tortoiseshell.

Resident, probably reinforced by immigration. Hedgebanks, lanesides, waste places, gardens, flowery fields, etc.; on *Urtica dioica*, *Humulus lupulus*. Found in all divisions.

This species, which is normally plentiful and frequently abundant, is one of the most numerous and generally distributed of our butterflies. There are, however, records of its having been scarce in the north-west. Thus, Kidner (*Diary*) wrote that between 1909 and 1940, it was "irregular and usually scarce in the Sidcup area; only noticeably plentiful in 1924"; and Jones (in *Wool. Surv.* (1909)), stated that it is "now scarce in the Eltham district". In this same area though, D. F. Owen observed that it was plentiful in 1946 and in August and September 1947, adding that in the latter year, 720 had been counted within a seven miles radius of Petts Wood.

There appear to be very few instances on record of large-scale immigration in this species, and the following observations are therefore of particular interest. H. G. Gomm (*Diary*) wrote that on September 6, 1926, he saw a flight of some hundreds of *urticae* in a lucerne field at Margate (div. 9), which he believed to be a migration. A much more circumstantial account, however, is that of Mrs. Winifred Brewer (*in litt.*), who witnessed on September 6, 1958¹, the day after a thunderstorm, the arrival about mid-day of great numbers of this species at St. Mary's Bay (div. 2). She describes "that they came in flying low over the mud, over the little shell beach, over the saltings, just clearing the spartina and sea-aster. Rising to clear the sea-wall and disappearing across the fresh marsh, lying now under water after Friday night's spectacular thunderstorm". She goes on to say that "later, walking E. of this Bay, we found hundreds of the insects resting upon the sun-warmed stones of the sea-wall. Several plants of Golden Samphire were so thickly covered that the yellow flowers had disappeared beneath the clusters of quivering red-brown wings. There were a few Painted Ladies in this great company".

The larva chiefly occurs on *U. dioica* (Stinging Nettle). It has also occasionally been found on *H. lupulus*, H. C. Huggins having several times seen larvae on hops that had run wild, in the Faversham and Sittingbourne areas between 1913 and 1927, and at Southfleet in 1903.

H. G. Gomm (*Diary*) writes that at Wye he took a ♀ *A. urticae* in cop. with a ♂ *Maniola jurtina* L., and added that he caged the *urticae* in an endeavour to obtain ova, but that none was deposited. Examples of inter-specific union are extremely rare, at least in nature, and the present case concerning as it does two species of very distinctly different families, may well be unique.

It has been stated that larvae of *A. urticae* are seldom subject to attack by ichneumons. Hammond and Smith (*Ent. Gaz.*, 8: 188),

however, record that they bred a Hymenopterous parasite, *Pteromalus puparum* L., from a pupa of this species from Tunbridge Wells.

VARIATION.—The butterfly varies considerably, both as regards pattern and colouration, but extreme examples are always very scarce.

In Brit. Mus. (S. Kensington) are three specimens labelled as ab. *ichnusoides* Selys: Bexley, two bred 1907; Beckenham, one, 1947.

An ab. taken by J. A. Parry at Swingfield, c. 1947, has no trace of the discal spots on forewing, and thus somewhat resembles *ichnusa* Bon.; and in the F. A. Small coll. is one from near Barham, 1918, apparently referable to ab. *nigricaria* Hav.

Specimens having the hindmarginal spot on forewing united with the median costal spot are referable to ab. *polaris* Stgr., transitions to which are of frequent occurrence in Kent in my experience. A ♀ taken at Broad Oak, August 28, 1940, approximates to ab. *leodensis* Cab. (C.-H.).

The following aberrations are in R.C.K.:—*clarirufa* Rayn., Folkestone, Deal, N. Kent; *polychoroides* Rayn., Folkestone, 1924, N. Kent, 1926; *rubrochrea* Rayn., Chattenden, 1893, N. Kent; *semialba* Froh., N. Kent, 1930; *brunneoviolacea* Rayn., Chatham, c. 1866; *erythrophaea* Fritch, Chattenden, bred 1893; *flavotessellata* Rayn., Dover, 1880, Deal; *magnilunata* Rayn., N. Kent, 1921; *parvilunata* Rayn., N. Kent, 1926, Folkestone, 1924; *cuneaguttata* Rayn., Chatham, 1860, Folkestone, 1924, Canterbury, bred 1907; *parviguttata* Rayn., Chattenden, 1893, N. Kent, 1924; *bolandi* Lamb., Folkestone, 1914; *magniguttata* Rayn., Canterbury, bred 1917; *ichnusoides* Selys, Chiddingstone, two bred 1924; *angustibalteata* Rayn., Chatham, 1865; *magnipuncta* Rayn., Cudham, bred 1914, Folkestone, 1924, N. Kent, 1924; *parvipuncta* Rayn., N. Kent, 1926; *tripuncta* Rayn., N. Kent, 1920; *parvinotata* Rayn., N. Kent, Folkestone; *adumbrata* Rayn., Folkestone, 1924, N. Kent, 1926; *magninotata* Rayn., N. Kent; *strigata* Rayn., N. Kent; *radiata* Rayn., N. Kent; *maculomissa* Goodson, Folkestone, two, 1920; *leodensis* Cab., Maidstone, 1926; *semichnusoides* Pron., Bromley, 1891, N. Kent, 1907, Dartford, 1871; *nigra* Tutt, Bexley, 1905, Eynsford, bred 1924; *albacapicata* Cab.—*nigricaria* Hav., Barham, 1907. Undersides: *subtusvenata* Lempke, N. Kent, 1926; *subtuspuncta* Reuss, N. Kent, 1926, 1929; *subtuslactea* Rayn., N. Kent, 1926, Folkestone, 1924. Also a homoeotic underside specimen, 1933, and several pathological examples.

Numerous other aberrations and abnormal specimens have been recorded (cf. *Entomologist*, 21: 132, 32: 285; *Ent. Rec.*, 22: 20, 34: 109; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1887: 71, 1935-36: 33, 1942-43 (2): 37, 1947-48: 42; *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1912-13: 31; Frohawk, *Nat. Hist. Br. Butts.*, 1, pl. 25, figs. 16, 17; Frohawk, *Vars. Br. Butts.*, pl. 22, fig. 4).

FIRST RECORD, 1812: Gravesend (Arnold, *Robert Pocock*, 65).

¹As a possible link with the source of this immigration on the continent, it may be of interest to mention here that while staying at Anderlecht, near Brussels, Belgium, from September 2-4, 1958, *urticae* absolutely swarmed at garden flowers to a degree that I have never witnessed anywhere before. The weather at the time was exceptionally hot and thundery (C.-H.).

Polygonia c-album L.: Comma.

Resident, perhaps native¹. Woods, hop plantations, gardens,

orchards, lanesides; on *Humulus lupulus*, *Urtica dioica*, *Ulmus glabra*, *U. procera*, *Castanea sativa*. Found in all divisions.

The Comma was generally scarce and of very uncertain appearance in Kent for a century or more prior to about 1930, but like *Limenitis camilla* L., it has spread from the west during the past thirty years or so, to become fairly well distributed and not uncommon in many parts of the county.

Obs.—The imago is most often observed singly or in small numbers; there appear to be very few known instances of its having been noted really plentifully, such as when "about 50" were reported as seen at West Wood (div. 8) on March 3, 1948 (D. Smith, *vide* A. M. Morley); or the case cited by Morgan (in Given (1946)) of one collector seeing fifty specimens on a single Buddleia bush near High Brooms (div. 13).

It appears to be a fairly hardy butterfly and has been seen on the wing as late as November 8 at Greenwich in 1947 (Grant, *Ent. Rec.*, 59: 153); and as early as February 28 at Reinden Wood in 1948 (Gilbertson, *vide* A. M. Morley).

The larva is perhaps mostly found on Hop (*H. lupulus*), particularly that growing in hedges. It has also been found on Stinging Nettle (*U. dioica*) at Sevenoaks (F. D. Greenwood); on Elm (*U. procera*) at Dover (B. O. C. Gardiner); often on Wych Elm (*U. glabra*) at Abbey Wood (C. H. Hards); and once on Spanish Chestnut (*C. sativa*) at Ham Street in 1948 (F. T. Vallins).

Early History.—The earliest reference to the butterfly in Kent appears to be that of Bree (*Mag. Nat. Hist.*, 5: 331), who gave it as very rare in the Dover district, adding that Mr. Leplastrier informed him that he had not seen it there for twelve or thirteen years, i.e. since 1818 or 1819. One was seen on a wall at Upper Deal in the summer of 1830 (Miss Harvey, *vide* Bree, *op cit.*, 5: 336); and Newman (*Br. Butts*) stated that he had heard "from many sources" that it was common in the Maidstone hop district "half a century ago", i.e. c. 1820, but could give no more precise details.

In 1831, Rennie (*Conspectus*, 8) recorded it from Penge Common (div. 1); and Newman (*Substitute*, 194), writing in 1857, stated that it was formerly common at this locality but had not been seen there or elsewhere near London to his knowledge for over 20 years.

1850-1929.—c. 1858: East Kent [Ashford district], five taken by A. Russell (Viggers, *Entomologist*, 27: 347). 1859: Tenterden (Beale, *Diary*); near Shorncliffe, mid. July (Rogers, *Ent. week. Int.*, 6: 180). 1860: West Wickham Wood, one, April 29, taken by Mr. Holiday (Healy, *Ent. week. Int.*, 8: 51). N.d.: Birch Wood, mentioned as having become extinct here by E. Newman in the Preface to the *Zoologist* for 1862 (*Zoologist*, 20: xxii). 1862-63: "I used to take it at Dover, 1862-63, sometimes it occurred commonly, but I have never seen it since nor have I heard of its capture" (Hall, *Ent. mon. Mag.*, 24: 77). 1868: Near Swanscombe Wood (West, *Ent. Rec.*, 18: 142). 1877: "I saw one captured on the outskirts of Chattenden in 1877, the only specimen I ever saw alive in a state of nature" (Tutt, *Roch. Nat.*, 1 (18): 302)². N.d.: Rochester district, "used to be common in our hop-gardens, but does not seem to occur now (1887)" (Tutt, *loc. cit.*) N.d.: Folkestone district, "rare, not lately" (Ulyett, *Simpson's Handbook to Folkestone* (1871)). 1878: Lower Hougham (div. 8), one (Webb, *Ent. mon. Mag.*,

24:131). c. 1879: Goddington near Ashford, one, W. Young (Viggers, *Entomologist*, **27**: 347). 1882: Near Walmer, seven (Webb, *Entomologist*, **27**: 321). 1887: Dover (Webb, *Entomologist*, **27**: 321). c. 1888: Sevenscore (div. 9) (Willson, *Entomologist*, **23**: 139). 1894: Dover Town, ♀ taken October 13 (Webb, *Entomologist*, **27**: 321)³. 1895: Upper Walmer⁴, ♀ taken, end September (Dannett, *Entomologist*, **23**: 307). 1898: Dover (Banks, *Ent. Rec.*, **11**: 25). Folkestone Warren (Stockwell, *Ent. Rec.*, **11**: 25). (1899): Dover district, "*G. c-album* survives, although not in numbers" (Webb (1899)). N.d.: Chelsfield (div. 5) (*Bromley List*, in *Wool. Surv.* (1909)). Alkham (*V.C.H.* (1908)). "Mr. Sydney Webb says that although it has now no fixed abode in the county, a few specimens are annually captured to the east and west of Dover" (Goss, in *V.C.H.* (1908)). 1900: Charlton (div. 1), one, August 14 (Green, *Ent. Rec.*, **12**: 276). c. 1905: Kent/Sussex border, several seen (Theobald, *Entomologist*, **61**: 121). [East Farleigh, a brood in E. B. Purefoy's butterfly garden (Frohawk, *Vars. Br. Butts.*, 100), were probably introduced (C.-H.)] 1916: Near Walmer, one mid. September (Williams, *Entomologist*, **49**: 288). 1921: Near Hythe, one taken by Dr. Twigg (Morley (1931)). 1927: Kent/Sussex border, four seen in a hop garden (Theobald, *Entomologist*, **61**: 121).

1930-1960.—From 1930 to 1932, there were relatively few records, but in 1933 the butterfly showed a marked increase following its easterly movement, and as might be expected many of the records for that year are for the Weald. 1930: West Wickham, one August 17 (Witting, *Entomologist*, **63**: 235). Reinden Wood, two, June, one, September; Gravesend, one, September (Huggins, *Entomologist*, **63**: 235). 1931: Sandhurst, one, April (Bull, *Entomologist*, **64**: 123); Folkestone district (Newman, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1932-33: 78). 1932: Benenden, one October 10 (Bull, *Entomologist*, **65**: 259). 1933: Edenbridge (F. D. Greenwood); Watlington, larva on hop, E. Goodwin; Dover, G. H. Youden; Benenden, well established, G. V. Bull (*Entomologist*, **67**: 116); Sevenoaks (Prideaux, *Entomologist*, **67**: 190); Hartley (Welch, *Entomologist*, **66**: 200); Sandhurst, August; larva on hop, September 2 (Bull., *Diary*).

By 1934, the species was well established in many parts of Kent, and in addition to some of the localities recorded the previous year, it was also observed at Seal (A. G. Peyton); Sidcup and Magpie Bottom (Kidner, *Diary*); Dover; Barham; Southfleet (*Entomologist*, **68**: 71); near Elham, "a good many", in August and September; singletons at Saltwood and Folkestone Downs (A. M. Morley). In 1935, it was again reported from many of the localities mentioned above and was also seen at Ryarsh (Fremlin, *Entomologist*, **49**: 127); Sturry (C.-H.); Eynsford (S. Wakely); Ham Street; Brook; Folkestone Town (A. M. Morley).

Since 1935, *c-album* seems to have been of regular occurrence in wooded areas throughout the county, and has also appeared, though perhaps less frequently, in some non-wooded districts. In div. 9, it was observed in numbers at Broadstairs, 1939 (S. Wachter MS.) (Tendall, *Entomologist*, **72**: 219); Northdown Park, 2 ♂♂, July 31, 1943; Lower Hale, two August 21, 1945, one April 1946 (W. D. Bowden); Sarre, two, summer 1944; Westgate, numerous, 1948 (T. W. Gomm); Westbrook, 1948 (L. W. Wilson). There is no record to my knowledge for the Isle of Sheppey (div. 2), and only one for div. 15, where E. Philp saw a single specimen at Dungeness on October 11, 1954. In div.

4, D. F. Harle (*in litt.*, 1960) writes that at Sandwich it has "increased to common during the last decade".

VARIATION.—The well known pale form *hutchinsoni* Robson (= *pallidior* Tutt = *lutescens* Bath) is frequently noted in Kent during the summer; but although it has been stated that very rarely specimens of this form have appeared in the autumn in Britain, all *hutchinsoni* that I have so far seen or heard of from Kent have been of the summer generation (C.-H.).

A. M. Morley (*in litt.*) writes that two ♀♀ in his coll., taken at Hunts Wood, July 6, 1943, and Folkestone, July 30, 1957, are "yellow, very much like the foreign *P. egea* above and below".

A ♂ taken by me at Ham Street, April 1960, is referable to ab. *delta-album* Der.; another from Hoads Wood, July 1958, has the white C broken and appears to be ab. *j-album* Spul.; and in a specimen from Broad Oak taken or bred by S. Morris, c. 1938, the ground colour was purplish-brown (C.-H.).

A specimen from Joydens Wood, 1948, has been assigned to ab. *suffusa* Frohawk, by D. F. Owen; and in R.C.K. is an example of ab. *c-extinctum* Gillm., Bexley, 1943.

FIRST (PUBLISHED) RECORD, 1832: Dover district (Bree, *Mag. Nat. Hist.*, 5: 331).

¹Many of the pre-1930 records, especially those for the east and north-east coastal areas suggest that the butterfly is also an occasional immigrant from abroad.

²"A solitary straggler taken at Chattenden in July 1887" (Walker, *Ent. Rec.*, 10: 103) may be the same despite the difference in date.

³Shepherdswell, 1894 (Webb, *vide* Goss in *V.C.H.* (1908)), may refer despite the discrepancy with regard to locality.

⁴At *Ent. Rec.*, 7: 86, the locality is erroneously given as Hythe.

***Argynnis paphia* L.: Silver-washed Fritillary.**

Native. Woods [on *Viola* sp.]. Locally fairly numerous¹, but never in profusion as in the New Forest and many western localities. Most prevalent in divisions 3, 11-14, where it is probably present in every suitable stretch of oak wood. Generally less frequent on chalk.

Prideaux (*Entomologist*, 83: 69) records that he observed a fresh ♂ at Brasted (div. 10) on September 17, 1949, perhaps an instance of partial second generation.

Obs.—I have thrice by chance come across the pupa as follows: (1) Barton Wood (div. 3), 1938, along edge of ride, suspended 5 ft. up from a hazel twig; (2) Birchett Wood (div. 12), June 1948, suspended from a wire fence encircling a clearing; (3) one partly formed, having fallen from the eaves of an out-house (C.-H.).

1. Penge Common (Rennie, *Conspectus*, 8). Abbey Wood, two, 1859 (Cox, *Ent. week. Int.*, 6: 139); July 10, 1944, ♂ on buddleia, R. G. Rigden (A. J. Showler); one, July 22, 1950 (A. H. Heselden). Birch Wood (Newman, *Young England*). West Wood (Newman, *op. cit.*); June 25, 1865, W. West (*Wool. Surv.* (1909)). Joyden's Wood, one, c. 1883 (Fenn, *Ent. Rec.*, 6: 228); common, especially attracted to bramble and privet blossoms, 1946-47 (D. F. Owen). Holwood Park, one, 1899, H. Alderson (*Wool. Surv.* (1909)). Beckenham, one, August 11, 1925 (Frohawk, *Entomologist*, 58: 271). Chislehurst, rare (S. F. P. Blyth). Shooters Hill, several, 1946-47 (D. F. Owen). Elmstead Woods,

1947; Hayes Common, 1947; Keston, 1947 (J. F. Burton). Well Wood, several, July 1950 (C.-H.). Petts Wood, 1949 (A. M. Swain). Grove Park, one, July 21, 1949, K. H. Hyett (D. F. Owen). Bickley, one, 1950 (Browning, in de Worms, *Lond Nat.*, 1949: 60). Farningham Woods, many seen, July 20, 1952 (A. H. Heselden).

5. Lullingstone, a few, 1950 (A. H. Heselden).

6. Wrotham Downs, 1922-23; Gravesend, one, August 28, 1949 (F. T. Grant). Eynsford, 1934 (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1934-35: 33); not common (B. K. West); 1947 (D. F. Owen). Shoreham, three, 1940 (H. E. Hammond); 1949, occasional (L. W. Siggs) (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1949-50: 76). Fawkham, several, August 2, 1948 (G. G. E. Scudder). Ryarsh, uncommon but regular (J. Fremlin).

6a. Darenth Wood, 1858 (Fisher, *Ent. week. Int.*, 4: 140); 1861, common (Fenn, *Ent. week. Int.*, 10: 195); fairly common (B. K. West); very plentiful, 1947 (Burton, in de Worms, *loc. cit.*); several daily, July 12, 13, 19, August 4, 1950 (A. H. Heselden). Cobham Woods, fairly common (B. K. West). Chattenden, plentiful (1947) (D. F. Owen).

7. Westwell Downs, three, June 27, 1857 (Russell, *Ent. week. Int.*, 2: 116). Westwell, at *buddleia* (Scott (1950)). Wigmore Wood, occasional (Chaney (1884-87)); a rare straggler (Walker, *Ent. Rec.*, 10: 102). Challock (1941) (A. M. Morley). Bredhurst Wood, very occasional, 1949 (L. N. Tesch). Lordswood; Bredhurst; Hempstead; common (Woodcock, *Rochester Nat.*, 1948: 6 (133), 3).

8. Near Dover, very rare, Leplastrier; near Folkestone, one, 1831 (Bree, *Mag. Nat. Hist.*, 5: 331). Mystole (H. C. Huggins). West Wood, before 1927, S. G. Hills (A. M. Morley). Near Bridge, 1941 (Gummer, *Entomologist*, 74: 269). Reinden Wood, two, July 13, 1946; Dover Hill, July 21, 1947 (A. M. Morley). Covert Wood, near Barham, one, 1926 (W. E. Busbridge, *fide* A. M. Morley). Woolwich Wood; Waldershare (E. & Y. (1949)), Brook, one, 1959 (D. Youngs).

10. Brasted, never common hereabouts (1933) (Prideaux, *Entomologist*, 67: 190); "fairly common in the lower damper woods, not in the higher sandy or gravelly upland scrubby woodland" (R. M. Prideaux, *in litt.*, 1950). Westerham (R. C. Edwards).

16. Hythe, one, August 1945 (R. E. V. Argyle, *fide* A. M. Morley). Sandling Park, three, July 14, 1947 (A. M. Morley).

VARIATION.—The well-known f. *valezina* Esp. is of very scarce occurrence in Kent, despite the fact that there are altogether records of some eighteen examples for the county. Blean Woods (div. 3), several (Parry, *Entomologist*, 5: 370); one 1898 (Walker, *Ent. mon. Mag.*, 34: 209); one (W. A. Cope); one, c. 1935 (M. Hilton, *fide* C.-H.); one, c. 1936 (J. Shepherd). Near Canterbury, three, July 14-25, 1924 (F. A. Small coll.). Sturry (div. 3) (Cox, in Newman, *Br. Butts.*). Ham Street (div. 12), one, July 11, 1930 (Duffield, *Entomologist*, 63: 210); one, July 18, 1936 (Bull, *Diary*); one, July 12, 1947 (A. M. Morley). Folkestone district, one [c. 1946] (A. Hardy, *fide* A. M. Morley). Woolwich Wood, one, July 24, 1946; Waldershare, one, 1949 (both localities in div. 8) (C. M. Gummer).

In R.C.K. are two underside aberrations: *subtusaurea* Reuss, ♂, "North Kent, vii.31, L. W. Newman" [*rosea* Cosm., "Sandhurst, 15.vii.38"]².

FIRST RECORD, 1831: Dover and Folkestone districts (Bree, *Mag. Nat. Hist.*, 5: 331).

¹On July 12, 1947, A. M. Morley saw about sixty *paphia* at Ham Street, but to see such a large number in Kent in one day is exceptional.

²It is not clear whether this is the Sandhurst in Kent.

A. cydippe L.: High Brown Fritillary.

Native. Wood borders and clearings [on *Viola* sp.]. Local.

1. West Wickham, four, 1858 (Perkins, *Ent. week. Int.*, **4**: 111). Abbey Wood, two 1859 (Cox, *Ent. week. Int.*, **6**: 139). Sidcup, one (A. H. Jones, in *Wool. Surv.* (1909)). Keston, one, June 16, 1920 (A. M. Swain Coll.). Joydens Wood, six, early August 1946, few, 1947 (D. F. Owen). Hayes Common, one, July 27, 1947, S. Johnson (D. F. Owen).

3. Blean Woods (H. A. Stowell, in Newman, *Brit. Butts.*) (Parry, *Entomologist*, **5**: 370); ♀, August 6, 1876, F. G. Whittle (Brit. Mus. (S. Kensington)). Canterbury* (Parry, *Entomologist*, **5**: 394). Blean Woods, two or three only, 1911-47 (J. Shepherd). Clowes Wood, a few seen annually on brambles; one taken July 23, 1946 (P. F. Harris). Church Woods, ♂, July 1893 (S. Wachter MS.). Dunkirk (H. C. Huggins). Pine Wood, c. 1947 (D. F. Harle).

5. Chevening district*, July 29, 1858 (Stanhope, *Ent. week. Int.*, **4**: 156). Chelsfield, sparingly, c. 1946 (D. F. Owen). Meanfield Hill, one July 5, 1957 (C.-H.).

6. Wrotham Downs, August 15, 1922 (F. T. Grant). Wrotham and Otford, sparingly c. 1946 (D. F. Owen). Shoreham, one worn ♂, July 27, 1952 (A. H. Heselden).

6a. Darenth Wood, two June 20, 1865 (Fenn, *Diary*); odd specimens seen in the 1930's, ♀ taken July 9, 1935 (B. K. West); sparingly, c. 1946 (D. F. Owen). Chattenden, one 1872, A. B. Farn (Chaney (1884-87)) (*Ent. Rec.*, **10**: 102); "abundant" (Tutt, *Roch. Nat.*, **1** (17), 302); numerous (1947) (D. F. Owen). Cobham, common, 1952 (A. S. Wheeler).

7. Westwell Downs, seven, June 27, 1857 (Russell, *Ent. week. Int.*, **2**: 116). Westwell; Long Beech Wood (E. Scott). Kingswood (H. A. Stowell, in Newman, *Brit. Butts.*) (E. Scott). Doddington, 1899 (Chitty coll.). Eastwell Park (Goss, in *V.C.H.* (1908)). Chilham*, one, June 10, 1923 (Gomm, *Diary*). Detling, August 6, 1928 (Bull, *Diary*). Godmersham, several ♂♂ and ♀♀, June 26, July 9, 1939 (C.-H.). Bredhurst Wood, one, July 1949 (L. N. Tesch). Boxley, 1953 (A. H. Harbottle).

8. Deal, 1858 (Harding, *Ent. week. Int.*, **4**: 197). Folkestone.—1859, plentiful on hill slopes to the east (Rogers, *Ent. week. Int.*, **6**: 180); a few flying with *A. aglaia* (Knaggs, *Q'tly. J. Folkestone nat. Hist. Soc.*, 1869 (4) 81). Dover, occasionally with *A. aglaia*; common throughout district in 1887 (Webb, *Ent. mon. Mag.*, **24**: 131). Near Barham, two, 1918 (F. A. Small coll.). Near Folkestone*, 1934 (E. M. Miller in *Lond. Nat.*, 1935: 68). Elham Park Wood, July 9, 1926 (W. E. Busbridge). Reinden Wood, about 12, July 11, 1929; 1946 (A. M. Morley). Whitfield, 1935; Woolwich Wood (E. & Y. (1949)). Dover Hill, two August 19, 1942 (A. M. Morley). Whithill Wood near Bridge, not common, c. 1946 (R. Gorer). Stelling Minnis, one c. 1948; Brockman Bushes, Postling, very common 1948, also seen 1949 (A. G. Maconochie). Stowting; Brook*; Wye* (C. A. Duffield). Cockerling Wood, ♂, June 1893 (S. Wachter MS.). Penny Pot Wood (H. A. Stowell, in Newman, *Br. Butts.*); one, 1898 (F. A. Small coll.); c. 1946 (J. A. Parry). Mystole (H. C. Huggins).

10. Fork Common near Sevenoaks (Raynor, in Newman, *Br. Butts.*). Hosey Common, locally common some years (Prideaux, *Ent. Rec.*, **58**: 37).

11. Maidstone district*, common, August 21, 1902 (Golding, *Entomologist*, **36**: 72). Near Wateringbury, fairly common (Goodwin, in *V.C.H.* (1908)). Mereworth Wood, few (R. M. Prideaux). Trench Woods, Tonbridge, July 19, 21, 1942 (J. S. Wachter MS.). Kings Wood, Chart Sutton, one, July 1948 (L. N. Tesch). Shipborne, three, 1951, (H. E. Hammond). Hoads Wood, one, July 10, 1955 (W. D. Bowden); common 1958-60 (M. Singleton, M. Endfield and D. Youngs) Dering Wood, c. 1951 (B. G. Chatfield). Marden, common (W. V. D. Bolt, *in litt.* 1960).

12. Ham Street, 1933-36; about 40, July 12, 1947 (A. M. Morley); 1956 (A. S. Wheeler). Birchett Wood, six fresh ♂♂, June 9, 1948; several ♀♀, June 20, 1949 (C.-H.).

13. Tunbridge Wells, common (Cox, *Entomologist*, **4** (62) ii) (E. D. Morgan). Frith Wood and Bedgebury Wood, c. 1951 (B. G. Chatfield).

14. Appledore, 1898 (Heitland, *Entomologist*, **31**: 221). Sandhurst (G. V. Bull). Hunts Wood, several 1949 (A. M. Morley). Tubbs Lake, Hawkhurst, c. 1950 (B. G. Chatfield). Goudhurst, common (W. V. D. Bolt, *in litt.*, 1960).

16. Hythe*, 1898 (Heitland, *loc. cit.*). Hythe, August 1, 1945 (Argyle, *vide* A. M. Morley). Sandling Park, three, July 14, 1947 (A. M. Morley).

VARIATION.—Bright (*Entomologist*, **15**: 129) records a single example of ab. *pseudocleodoxa* Vty. (= *cleodoxa* O.) taken at Sevenoaks between 1854 and 1856.

Turner (*Ent. Rec.*, **29**: 183) records that B. Adkin took an ab. in Kent in 1917, similar to one he had himself, which "consisted of the presence of silvery spots in several of the large round black spots which lie across the post-discal area of the underside of the forewings".

The following four aberrations are in R.C.K.:—(1) Ab. *albomaculata* Goodson, paratype ♂, taken Penny Pot Wood, July 7, 1888 (Frohawk, *Nat. Hist. Br. Butts.*, pl. 13, fig. 17; also recorded in *Entomologist*, **46**: 121, **81**: 177). (2) A ♂ ab. underside having the silver basal spots confluent forming three ovals, West Wood, Lyminge, July 17, 1900 (this must be the one taken by R. S. Mitford, recorded in *Entomologist*, **33**: 281, fig'd) (3) A ♂ underside ab. having margins yellow with markings faint, labelled "F. A. Small, Kent, 1898". (4) Ab. *cuneata* Tutt, N. Kent, June 1929, L. W. Newman.

FIRST RECORD, 1857: Westwell (Russell, *Ent. week. Int.*, **2**: 116).

[**A. niobe** L.: Niobe Fritillary¹.

Doubtfully genuine².

4. A ♂ at H. Haynes coll. sale, November 28, 1951, catalogued "A. F. Winters, Deal, August 1892, ex Meikham coll." (C.-H.).

8. Between Wye and Ashford [Brook].—It is recorded that a few *niobe* were taken in 1872, 1873 and 1874, and that the captors were G. Parry and W. Wigan; also that a considerable number were taken subsequently by Y. A. Parry (born 1874) (cf. *Entomologist*, **6**: 483, **7**: 88, 171, 174, 225, 288 (ab. *eris* Meig.), **8**: 183, **9**: 21, 22, **10**: 5, **80**: 21;

Ent. Rec., **4**: 299; *Ent. mon. Mag.*, **10**: 253; Barrett, *Br. Lep.*, **1**: 165-167; *Young Nat.*, **1**: 395, 407, 411³.

10. A ♀ *niobe* in R.C.K. is labelled: "Sevenoaks 1856" (C.-H.).]

¹Besides Kent, single specimens of *niobe* have been recorded from Lyndhurst, Hants, 1868 (*Entomologist*, **4**: 351); Monk Park Wood, Suffolk, c. 1879 (*Ent. mon. Mag.*, **36**: 41, 89); N. Lancs., 1871 (*Entomologist*, **8**: 83); Chichester, Sussex, 1895 (*Ent. Rec.*, **22**: 19).

²Rowland-Brown (*Entomologist*, **43**: 301) refers to its occurrence on the coastal sand dunes of the departments of Nord and Pas de Calais, France, where it feeds on *Viola sabulosa* and states that its occurrence there lends probability to the doubtful records of this butterfly in Kent.

³The records do not show that the Parry and Wigan specimens were ever determined so as to exclude all possible doubt as to their specific identity, and in an attempt to ascertain at least whether or not they were in fact *niobe*, a request was made in *Entomologist*, **84**: 92, for information as to the whereabouts of any such specimens that might still be in existence. Unfortunately, no communication was forthcoming so that the position remains extremely unsatisfactory (C.-H.).

A. *aglaia* L.: Dark Green Fritillary.

Native. Chalk downs and cliffs, open woods, sand dunes [on *Viola* sp.] Mainly in 6, 7, 8; probably casual in 2, 15. Apparently generally less plentiful in Kent since about 1930.

"Generally distributed throughout the county, both on the chalk hills and in the wooded part of the Weald" (V.C.H. (1908)).

1. West Wickham (V.C.H. (1908)). Lewisham, one taken at *buddleia* on a bombed site, July 28, 1945, by D. F. Owen; Joydens Wood, occasionally seen (1946) by D. F. Owen, flying with *A. cydippe*; one taken, June 26, 1947, by S. Johnson (D. F. Owen). Petts Wood, occasionally (F. Swain, in de Worms, *Lond. Nat.*, 1949: 59).

2. Abbey Wood Marshes, one, July 25, 1947 (J. F. Burton).

3. Near Herne Bay, one, 1859 (Butler, *Ent. week. Int.*, **6**: 180). Thornden Wood, in very large numbers in a few fields adjoining the north border in 1916-20, afterwards decreasing, only 2 ♂♂ in 1924, none 1926 (Shepherd, *Entomologist*, **59**: 18). Blean, in some numbers, June 24, 1921; Thornden Wood, one, July 12, 1922 (Gomm, *Diary*). Blean Wood, quite plentiful until 1932 (D. G. Marsh). Broad Oak, one stray flying rapidly northwards, 1936 (C.-H.).

4. Sandwich, five, July 25, 1922; one, August 1, 1923; ♀, August 1, 1924; six, July 6, 1929 (Gomm, *Diary*). Sandwich Bay, seen fairly regularly; Richborough, occasionally (D. F. Harle, *in litt.*, 1960).

5. Chevening district*, 1858 (Stanhope, *Ent. week. Int.*, **4**: 156). Chevening, one in a cornfield, July 27, 1917 (Gillett, *Diary*). Biggin Hill, plentiful on hillsides near the salt-box, 1948 (J. F. Burton).

6. Mainly on the chalk downs in the southern half.—Vigo Hills (E. Andrews, *fide* Chaney (1884-87)). Holly Hill, 1890 (Tyrer, *Ent. Rec.*, **1**: 207); plentiful at Halling, Holly Hill (Walker, *Ent. Rec.*, **10**: 102). Shoreham, 1899 (Car, *Entomologist*, **33**: 46); common, 1949, 1950-51, 1953 (A. S. Wheeler). Gravesend [c. 1900], "rare, probably wanderers" (H. C. Huggins). Meopham, 1916; Birling, 1910, 1914 (F. T. Grant). Otford, used to abound in fields near here before the rough pastures were destroyed and ploughed (R. M. Prideaux, *in litt.*, 1950); very plentiful, July 13, 1912, 1913 (Gillett, *Diary*). Snodland, one of the best localities, but only 2 ♂♂ seen in 1931 (Newman, *Proc. S. Lond.*

ent. nat. Hist. Soc., 1932-33: 78). Fawkham, 1946 (E. J. Hare). Eynsford, plentiful 1930, few 1931-32, plentiful 1933-34; Magpie Bottom (A. R. Kidner). Eynsford and Shoreham, common 1949 (A. M. Swain). Abundant in 1947 in many fields between Eynsford and Wrotham; on July 6, 1947, "in a field behind Eynsford they could be put up from the grass like meadow browns (the day was cloudy); dozens could sometimes be seen feeding from flowers at the roadsides in company with many *A. urticae* and *N. io*" (D. F. Owen, *in litt.*).

6a. Chattenden, ♀ taken 1858 (Chaney (1884-87)) (Woodcock, *Rochester Nat.*, 1948: 6 (133), 2). Darenth, 1865 (West, *Ent. Rec.*, 18: 142) (Carrington, *Entomologist*, 12: 211); formerly common (West, *in Wool. Surv.* (1909)). Cobham Wood, one, 1952 (Popham, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1952-53: 83).

7. Westwell Downs, 1857 (Russell, *Ent. week. Int.*, 2: 116). Burham Downs, plentiful (Walker, *Ent. Rec.*, 10: 102). Maidstone district, 1902 (Golding, *Entomologist*, 36: 72). Detling, c. 1930 (G. V. Bull). Ashford district, "usually common on the downs" (Scott (1936)); "less common nowadays, since decrease began in 1930's" (E. Scott, *verbatim*, 1952). "An abundant species on downland lying against woods. Walderslade, Lordswood, Bredhurst, Burham Down, Hempstead. On 19th July 1941 the ground in one place near Walderslade appeared carpeted with parties of *A. aglaia* . . . in groups of anything up to a dozen" (Woodcock, *Roch. Nat.*, 1948: 6 (133), 2). Boxley, 1953 (A. H. Harbottle).

8. Apparently rather well distributed in this division and fairly numerous most years, though occasionally scarce. Recorded from Folkestone Warren and east downs, Chilham, Petham, St. Margaret's Bay, Kingsdown, Alkham, Wye, Ewell Minnis, Barfreton, Stowting, Brook, Covert Wood near Barham, Haddling Wood near Waldershare, Chillenden, Elham, Combe Wood near Hougham, Sole Street, Crundale, Reinden Wood, Betteshanger, Near Lydden, Cheriton. A. M. Morley has noted it in small numbers almost annually in the Folkestone area from 1928-49; he did not see it in 1930, 1934, 1939, 1940, but in 1947 counted over forty on the Dover Hill at Folkestone between July 22 and August 7, including twenty on July 22.

10. Near Westerham* and Sevenoaks* (Newman, *Young England* (1860)). Brasted* (Adkin, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1901: 22); "odd specimens all over the district" (R. M. Prideaux).

11. Dering Wood, c. 1950 (B. G. Chatfield).

12. Orlestone Woods, ♀ taken July 1959 (M. Enfield).

13. Woods of the Weald* (*V.C.H.* (1908)). Bedgebury Wood, c. 1950 (B. G. Chatfield).

14. Hawkhurst, c. 1950 (B. G. Chatfield).

15. Dungeness, ♂ July 15, 1934† (A. G. Peyton).

16. [Hythe, larvae, July 1898 (Heitland, *Entomologist*, 31: 221).] Cheriton, one, August 3, 1935; Sandling Park, one or two, July 14, 1947 (A. M. Morley).

VARIATION.—The following aberrations are in R.C.K.:—*albomaculata* Rebel (= *molybdina* Newnh.), ♂, Folkestone, 1907, C. P. Pickett (*Ent. Rec.*, 56: 34); *flavescens* Tutt, ♂, St. Margaret's Bay; abs. with "black dusting in median area", N. Kent, ♂, 1918, ♂, 1920, 2 ♂♂, 1929; ♂ ab. partially melanic, "Folkestone, August, 1929, G. D.

Smith coll.". Underside ab. *robnora* Kershaw, ♂, Eynsford, 1901, L. W. Newman (South, *Entomologist*, **35**: 1, fig. 1; Frohawk, *Nat. Hist. Br. Butts.*, **1**, plt. 14, fig. 18). Also a bilateral gynandromorph, right side ♀, Folkestone, 1946 (Payne, *Entomologist*, **81**: 40).

Weir (*Entomologist*, **15**: 50, plt. 1, fig. 1) records two partially melanic abs. taken by P. H. Cooper, near Dover, 1881; and one similar, taken Langdon Hole near Dover, 1900, is recorded by Sabine (*Entomologist*, **33**: 303).

Bree (*Mag. Nat. Hist.*, **5**: 334) records one from Dover, "pale buff coloured, with the black spots and markings very faint", which was taken "in a remarkably wet season". This specimen is in Dale coll. (*Ent. mon. Mag.*, **18**: 101).

A specimen in which the "ground colour is quite silvery", ab. *argentea* Austin, was taken at Folkestone in 1889 (Austin, *Ent. Rec.*, **1**: 11); and Webb (*Entomologist*, **21**: 132) records one from Dover with "markings of upper wings prolonged to the centre of the disc, thus forming an irregular black band".

Knaggs (*Qttly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 81) very truly said "Black examples are rare", which suggest that at least one such example had been taken in the Folkestone district before 1870. A. M. Morley (*in litt.*) writes that the professional Bailey—who used to collect for Sydney Webb—told him in 1928, that he took a black *aglaia* at Folkestone on the east downs, but this was probably after 1870. A "melanic ab., rather rubbed and chipped, taken Otford, June 29, 1942, was sold to L. H. Newman for apparatus to the value of £5" (J. S. Wachter MS.).

A colony at Eynsford sometimes produces ♀♀ which in appearance approach ssp. *scotica* Watkins (D. F. Owen); and a ♂ taken by me, Chilham, 1937, is symmetrically marked with a whitish patch in the subapical area of each forewing (C.-H.).

FIRST RECORD, 1827: "Captured in plenty at Dover" (Stephens, *Haust.*, **1**: 40).

A. *lathonia* L.: Queen of Spain Fritillary.

Immigrant. Downs, lucerne fields, etc., chiefly on the chalk; food-plant unknown. Mainly recorded from the eastern half of the county particularly the coastal areas of 8 and 9.

Since 1818, some 250 *lathonia* have been recorded for Kent, which number exceeds the total for the whole of the rest of Great Britain; nearly all have appeared in late summer or autumn, and it is almost certain that a few at least were the progeny of spring immigrants. It is noteworthy that since 1885, the butterfly has appeared much more rarely, and in the seventy-five years that have elapsed since then, altogether only a dozen specimens have been seen.

1818-1892.—1818: Dover, ♀, August 12, foot of Shakespeare's Cliff; pair, August 14, in Castle Meadow, Dover; "specimens taken near Birch-wood (div. 1) at the end of September" (Stephens, *Haust.*, **1**: 38).¹ N.d.: Near Birch Wood, eight specimens on the flowers of "*Hieracium sabaudum*" (B. Standish, in Newman, *Br. Butts.*, 34), "three of these were taken in one year²—the others only one during each year" (Newman, *loc. cit.*). 1826: Dover, in Dale coll. (*Ent. mon. Mag.*, **43**: 101). c. 1839: Shoreham (div. 5 or 6), twelve specimens taken by

Thomas Price on the blossoms of thistles in open parts of a wood near here (Newman, *Zoologist*, 945).³ 1846: Near Dover, three taken in autumn, A. Greenwood (Weir, *Zoologist*, 1505). [c. 1856: Canterbury district, nineteen taken (Parry, *Entomologist*, 4: 160, 7: 16)]. 1857: Margate, two, August (Edwards, *Ent. week. Int.*, 2: 188); Dover, one, August (Hayward, *Ent. week. Int.*, 2: 181); between Upnor and Chat-tenden (div. 6a), two (Crozier, *Ent. week. Int.*, 2: 182). [N.d.: Chislehurst (div. 1) (Woolaston, *Zoologist*, 5001)] 1858: Thanet, one (Mosse, *Ent. week. Int.*, 4: 192); Ashford, one, Thomas Cooke (*Entomologist*, 75: 137); Ashford, five (Russell, *Ent. week. Int.*, 5: 3). 1858 or 1859: Wingham neighbourhood, seventeen reported taken, but can only vouch for one (Hammond, *Zoologist*, 8242). 1860: Folkestone, ♀ taken by P. Wells, Stiff coll. (A. M. Morley). 1864: Cliffs End near Ramsgate, one exhibited by W. Groves at West Kent Nat. Hist. Soc. (Weir, *Entomologist*, 2, 132). 1865: Dover, one, September 16 (Richardson, *Ent. mon. Mag.*, 2: 341); Folkestone, ♀, on Westcliff, September 18; between Folkestone and Dover, one (Briggs, *Ent. mon. Mag.*, 2: 164); Tenterden (div. 14), one (Addison, *Ent. mon. Mag.*, 2: 164).

1868: Margate, one (Cottam, *Ent. mon. Mag.*, 5: 106); one (Boyd, *Ent. mon. Mag.*, 5: 147); two (Gavillier, *Ent. mon. Mag.*, 5: 171); two (Newman, *Entomologist*, 4: 147). Ramsgate, one (Armstrong, *Entomologist*, 4: 146). Walmer, one (Standish, *Entomologist*, 4: 161). Deal, one; between Dover and Deal, two (Leslie, *Entomologist*, 4: 161). Herne Bay, one, "Herne Bay, August 1868, E. Butler" (R.C.K.). Folkestone Warren, one (Purdey, *Ent. mon. Mag.*, 5: 130). [Canterbury district, ten (Parry, *Entomologist*, 4: 160).] Bridge, two (Hurst, *Entomologist*, 4: 161). Gravesend* (div. 6), one (Button, *Entomologist*, 4: 146). Milton near Gravesend* (div. 6), one (Todd, *Entomologist*, 4: 250). Darenth Wood (div. 6a), one (Harper, *Entomologist*, 4: 146). 1869: between Selling and Chilham (div. 7), one (Stowell, *Ent. mon. Mag.*, 7: 85).⁴ [1869-73: Canterbury district, taken annually (Parry, *Entomologist*, 7: 16).]

1872: Some sixty-two *lathonia* were noted as having occurred in Kent from the end of July to the beginning of October 1872, the largest number ever recorded during any one year; some of these however are considered to be doubtfully genuine.—Margate, three (Barrett, *Entomologist*, 6: 213). Near Ramsgate, five, July 30 to August 6, within 100 yards of the same spot (Snowden, *Ent. mon. Mag.*, 9: 111). Deal Sandhills, one; Gussen, one; Shepherdswell, four (Seabrook, *Entomologist*, 6: 235). Deal Sandhills, one; Kingsdown, two (*Entomologist*, 6: 284) (but possibly previously recorded (C.-H.)). Dover⁵ (Ullyett, *Ent. mon. Mag.*, 9: 111), two (Jarvis, *Entomologist*, 6: 213), one (Cox, *Entomologist*, 6: 214), six (Foord, *Ent. mon. Mag.*, 9: 160, six between September 13 and 19, including a pair *in cop.* (Stevens, *Entomologist*, 6: 220, 393). Folkestone, three (Seabrook, *Entomologist*, 6: 235), one (Oldham, *Entomologist*, 6: 214). Folkestone Warren, one (Greenish, *Entomologist*, 6: 235). [Chartham Downs near Canterbury, twenty-four, including ♀ just emerged with wings limp (Parry, *Entomologist*, 6: 192, 213).]

1873: One, "Taken by W. Russell, nr. Dover, August 1873" (R.C.K.). [1874: Chartham Downs near Canterbury, ten (Parry, *Entomologist*, 7: 289). Between St. Peters and Broadstairs, five (Wigan, *Entomologist*, 7: 233).] 1875: Walmer, two (Hall, *Ent. mon. Mag.*, 24: 77).

1876: Broadstairs, one (Hernaman, *Entomologist*, **10**: 162). One, "Dover, 1876, Austen" (R.C.K.). 1877: Near Dover, one August 24 (R.C.K.). 1878: One "Folkestone, August 1878"; one, "Kent, 1878, Dr. Harper's coll."; one, "Dover, September 1878, L. A. H. Jones, C. A. Briggs coll. (R.C.K.). 1880: Near Dover, eighteen taken, September 7-14, by Messrs. Gray, Bailey, Hanbury and others (Webb, *Entomologist*, **13**: 276). 1882: Dover, twenty-five taken, September 10-21, including a cripple (Sabine, *Entomologist*, **15**: 258-59). 1883: Dover, ten, September 14-29 (Sabine, *Entomologist*, **16**: 282-83). Herne Bay, one, ex A. B. Farn coll. (R.C.K.). 1884: Near Canterbury, one, Miss Jellie (*Entomologist*, **17**: 208). A ♂, "Taken in lucerne field near Margate, August 19, 1884". "A. U. Battley coll." (R.C.K.). (1884): Wye Downs, "has been taken more than once" (Burney, *Entomologist*, **17**: 232). 1885: Kingsdown, one (Webb, *Ent. mon. Mag.*, **24**: 131). [1892: Dover, one, Vivian (Nat. Mus. Cardiff, *per* Rothamsted); Dover district, "we have not heard of a genuine capture of *lathonia* since 1885" (Webb (1899)).] N.d.: Herne Bay (*V.C.H.* (1908)).

1910-1946.—1910: Folkestone Warren, one, June 27 (Salamon, *Entomologist*, **43**: 227). 1911: St. Margaret's Bay, ♀ (Gunton, *Entomologist*, **44**: 324). 1919: Folkestone Warren, one, N. H. Gurney (Mathew, *Entomologist*, **52**: 260). 1921: Near Crundale, ♂, A. H. Wood (Scott (1936)); Gravesend, one (Watson, *Entomologist*, **55**: 88). 1924: Near Tonbridge, one, June 2 (Fassett, *Entomologist*, **57**: 186). 1935: Saltwood (div. 16), one seen by H. D. Dale, July 31 (A. M. Morley); Ottinge near Elham, one taken in a garden on catmint by D. O. Dykes (Dannreuther, *Entomologist*, **69**: 230). Goss Green near Ham Street (div. 12), one, July 15 (Woodcock, *Ent. mon. Mag.*, **43**: 101); Brook (div. 8 or 12), one, October 5 (C. A. W. Duffield). 1946: St. Margaret's Bay, one, end of July (Molesworth, *Entomologist*, **81**: 71); St. Peters, ♀, August 26 (Hunt, *Rep. Thanet Fld. Cl.*, 1948: 23).

VARIATION.—Newman (*Entomologist*, **6**: 393) states that specimens taken at Dover in 1872 were "much smaller than usual" and "much darker in colour, especially about the base of the wings"; and he mentions one such example in particular (figured), taken by S. Stevens on August 18, in which the basal markings are joined.

Fenn (*Lepidoptera Data* MS.) writes that "Dover specimens have the spots on the upper side at the anal angle of the hindwing small. The reverse is the case with Continental examples".

Tutt (*Br. Butts.*, 281) mentions one which was sent to him, taken at Dover, 1882, having the "black spots near the middle and base of the wing enlarged and joined"; and Frohawk (*Nat. Hist. Br. Butts.*, **1**, plt. 15, fig. 17; *Vars. Br. Butts.*, 63) records a ♀ taken at Dover, September 21, 1883, from A. B. Farn coll., "with all the central markings confluent and much enlarged".

Barrett (*Br. Lep.*, **1**: 171) records one from S. Webb coll., having "the black spots of the inner row on the hindwings abnormally small"; and another (plt. 25, fig. 1a) from the Sabine coll. with "the whole basal area suffused with brilliant steel-blue instead of the golden tinge, and the larger spots of the forewings of unusual size and blackness, and almost confluent". Both specimens from Dover.

FIRST RECORD, 1818: Dover (Stephens, *Haust.*, **1**: 38).

¹Curtis, *Br. Ent.*, 290; *Mag. Nat. Hist.*, **5**: 334; *Ent. Mag.*, **3**: 313; and *Ent. mon. Mag.*, **43**: 101 refer.

²Presumably those mentioned by Stephens (*loc. cit.*) as having occurred in 1818.

³In Selwyn Image coll. (Hope Dept.) is a ♂ labelled "Kent, Shoreham, J Price, 1840, Sequeira coll."

⁴"Near Chilham", 1870 (Knaggs, *Ent. Annual*, 1871: 72), possibly refers.

⁵Bird (*Entomologist*, **6**: 214) states that he himself had heard of as many as thirty taken at Dover in 1872; and Grey (*Ent. mon. Mag.*, **9**: 111) gives a total of not less than nine captures up to August 26 that year.

Glossiana euphrosyne L.: Pearl-bordered Fritillary.

Native. Woods; on *Viola riviniana*¹. Found in all divisions, except 2, 4, 9, 15. Often plentiful², and in some divisions (e.g. 3 and 12) abundant. Much more restricted in 1 than formerly; comparatively few records for 5, 10, 16.

The butterfly is normally single brooded, but very occasionally specimens of a second generation have been noted as follows: Darenth, one fresh specimen, September 6, 1893 (Scarfe, *Ent. Rec.*, **5**: 15); Magpie Bottom (div. 6), one, August 3, 1943 (H. E. Hammond); Barham (div. 8), ♂, August 7, 1950 (A. G. Maconochie). Blean Woods, September 26, 1933, A. J. L. Bowes (R.C.K.).

Obs.—Despite its local abundance, the larva of *euphrosyne* is one of the most difficult of all to locate, and indeed is very rarely ever seen. Shepherd (*Entomologist*, **58**: 185), however, records that in Blean Woods in May 1925, he took seventeen full-grown examples in as many minutes, and added that he "could have got any number" had he felt disposed. A very curious fact in connection with this phenomenon is that the spring of 1925 was abnormally cold and wet, and all but two of the pupae resulting from the larvae which Shepherd took were found upon microscopical examination to be clean empty cases, except for a small deposit of fungus at the anal end, and without any trace of insectivorous parasitism. The extraordinary dearth of the butterfly in that year both at this locality and elsewhere is also particularly noteworthy, in view of the foregoing circumstances.

1. Recent records for this division are: Near Well Wood, numerous, 1947 (C.-H.). Joydens Wood, common, 1946-47; Elmstead Wood, common, 1946-47; near Hayes Common, 1946-47; Sunridge Park, few, 1946 (D. F. Owen). Petts Wood, 1944, 1949, abundant 1948 (A. S. Wheeler); 1951 (A. M. Swain).

5. Downe, 1948; Knockholt; Badgers Mount, 1949 (L. W. Siggs).

10. Witley Forest, 1913 (Gillett, *Diary*). Brasted Chart; Sevenoaks; fairly common (R. M. Prideaux). Brasted (Prideaux, *Entomologist*, **46**: 327); very scarce, 1933 (Prideaux, *Entomologist*, **67**: 190). Westerham (R. C. Edwards) (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1951-52: 72).

16. Sandling Park, one seen May 31, 1944; Folkestone Town, one, May 18, 1945; one, June 4, 1949, both in a garden and probably strays (A. M. Morley). The butterfly almost certainly occurs in the extensive woodlands in the extreme west of the division (C.-H.).

VARIATION.—Mera (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1890-91: 51) exhibited a "well-banded specimen" taken by him at Chattenden; and I have one from Ham Street with median spots joined into an indented fascia similar to the specimen in Barrett (*Br. Lep.*, **1**, plt. 25, fig. 2c),

and two others from the same locality in which the median spots partially coalesce (C.-H.).

South (*Entomologist*, **27**: 180, fig. 1) records a ♀, taken in Kent in 1890, having the "discoidal cell almost filled up with black", and with "a quadrate spot of the same colour below it", and "the spots forming the central series large and united".

Frohawke (*Vars. Br. Butts*, plt. 13, fig. 3-4), records a ♂ taken at Blean, 1920, with the marginal spots elongated, and having underside hindwings most strikingly marked with marginal reddish-brown radiations on a white and yellowish ground.

The following abs. are in R.C.K.:—*ovalis* Hack., ♂, Watlington, 1907; *interligata* Cab., N. Kent, 1912; *tatrica* Aign. (with suffusion), near Ashford, 1935, Canterbury, 1888; *rubescens* Cab., Sevenoaks, 1886; *conducta* Nordst., West Wickham, 1882; *pitioni* Nitsche, Blean Woods, 1930, 1934, 1937; *rinaldus* Herbst, Blean Woods, 1938; *trans. ad rinaldus* Herbst, St. Mary Cray, 1888 (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1888-89: 57, plt. 1, fig. 3). Also the following two abs.:—(1) With "washed out ground and markings" Bromley, 1923; (2) ♀, suffused with black to central band, marginal spots especially of hindwings united with inner series, West Wickham, 1887 (Frohawke, *Vars. Br. Butts*, plt. 13, fig. 2, as ab. *hela* Hummel).

FIRST RECORD, 1831: "Darent and Birch Woods . . . literally by thousands" (Newman, *Mag. Nat. Hist.*, **4**: 558).

¹I have watched *euphrosyne* ovipositing on this in Blean Woods; and Dr. Scott tells me he once found a larva in the Ashford district which was feeding on it (C.-H.).

²The species appears to have become appreciably scarcer for a time in some parts of Kent at the end of the 19th century and beginning of the 20th (cf. Fenn, *Ent. Rec.*, **6**: 229; Barrett, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1908-09: 77; *V.C.H.* (1908)).

C. selene Schiff.: Small Pearl-bordered Fritillary.

Native. Woods [on *Viola* sp.]. Has a markedly smaller distribution area than formerly, and except in the Weald, is decidedly more local than *C. euphrosyne*. There are no recent records for 3, 6a and 16 (though it is unlikely to be absent from the extreme west of this division); and it is probably extinct in 1 and 10.

The smaller second brood specimens, *selenia* Fr., occasionally occur.

1. Birch Wood (Newman, *Mag. Nat. Hist.*, **4**: 558). West Wickham Wood, plentiful, 1857 (Healy, *Ent. week. Int.*, **2**: 93; Wood, *op. cit.*, **2**: 109); 1858-59 (Perkins, *Ent. week Int.*, **4**: 111; Allchin, *op. cit.*, **7**: 187); one, 1883 (Geldart, *Entomologist*, **16**: 278). West Wood, abundant (W. Groves, *vide* Fenn, *Diary*, 1861). Shooters Hill; Joydens' [Joydens] Wood (Newman, *Br. Butts*). Keston (*Bromley List, per Wool. Surv.* (1909)) "Has long since disappeared from most of the woods near London" (*V.C.H.* (1908)). Joydens Wood, c. 1925 (L. T. Ford). ["In Kent it is generally distributed but not common in woods round Chislehurst and West Wickham from 1932 to 1946" (F. R. Browning, in *de Worms, Lond. Nat.*, 1949: 59).]¹

3. Herne Bay district, one (Butler, *Ent. week. Int.*, **8**: 172). Thornden-West Blean Woods, June 11, 1865, two, May 28, 1866; twelve, May 29-June 3, 1866 (Fenn, *Diary*). "In every wood about Faversham and Canterbury" (Stowell, in Newman, *Br. Butts*). Blean Woods,

four, May 29-June 8, 1876, F. G. W[hittle] (Br. Mus. (S. Kensington)). Blean Woods near Herne Bay, still occurs (*V.C.H.* (1908)). Perry Wood, a few, 1913 (H. C. Huggins). Canterbury, 1930 (Stephen Jones, *Entomologist*, **65**: 260). [J. Shepherd told me that until he put "a lot" down in Thornden Wood, c. 1932, he had never seen *selene* in this division; in 1946, I saw a few at this locality (C.-H.); second emergence, September 1933 (Smart, *Entomologist*, **67**: 39).]

6a. Darenth Wood (Newman, *Mag. Nat. Hist.*, **4**: 558). Chatten-den, uncommon (Chaney (1884-87)) (Walker, *Ent. Rec.*, **10**: 102). Chattenden, one, June 3, 1893 (Tutt, *Ent. Rec.*, **4**: 229).

7. Doddington, second brood, ♂, August 1895 (Chitty coll.). Chilham*, June 15, 1924, June 20, 1925 (H. G. Gomm, *Diary*). Long Beech Wood, plentiful, c. 1930, 1938 (C.-H.). Westwell (Scott (1936)). Kings Wood (Scott (1950)). Challock, in fair numbers, 1931 (A. M. Morley).

8. Deal or Canterbury neighbourhood*, Miss Harvey (Bree, *Mag. Nat. Hist.*, **5**: 331). Woods between Barham and Stowting (W. O. Hammond, in Newman *Br. Butts*). Folkestone (Ullyett (1880)). Woods near Shepherdswell (Webb, *Ent. mon. Mag.*, **24**: 131). In most of the woods between Wye and Canterbury (*V.C.H.* (1908)). Near Barham, one, 1921 (F. A. Small coll.); common (E. & Y. (1949)). Reinden Wood, dozens, June 10, in hundreds, fresh, June 22, 1929 (H. G. Gomm, *Diary*); 1930, many, June 18, 1932; 1948; 1953 (A. M. Morley). West Wood, several 1932, 1933; Selstead, eleven June 13, 1928 (A. M. Morley). Brook; Stowting; common (C. A. W. Duffield). Penny Pot Wood (J. A. Parry). Woolwich Wood, June 13, 1954 (W. D. Bowden). Ewell Minnis; near Waldershare (E. & Y. (1949)).

[9. Ramsgate (Stainton, *Man.*, **1**: 43); a most unlikely locality (C.-H.).]

10. Fork Common near Sevenoaks (G. H. Raynor, in Newman *Br. Butts*). Brasted, "I have never seen this damp-loving species here" (R. M. Prideaux, *in litt.*, 1950).

11. Hoads Wood (Scott (1936)); c. 1953 (P. Cue); common, 1959-60 (M. Singleton, M. Enfield, & D. Youngs). Mereworth Woods, 1953 (L. N. Tesch, *vide* C. A. Stace).

12. Ham Street Woods (Scott (1936)); common to abundant annually in Long Rope and adjacent woods; several, May 26, 1956 (C.-H.). Hothfield Bog (Scott (1950)). Bourne Wood (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1955: 73).

13. Pembury (Stainton, *loc. cit.*) (Adkin, *Entomologist*, **80**: 148). Bedgebury (*V.C.H.* (1908)). Bedgebury Park (Woodcock, *Rochester Nat.*, 1948: **6** (133), 2). Bedgebury Wood; Lower Green, Pembury; Angley Wood; Cranbrook; Frith Wood; Badgers Oak; abundant (B. G. Chatfield, *in litt.*, 1950). Goudhurst, scarce (W. V. D. Boulton, *in litt.*, 1960). Tunbridge Wells district, "Uncommon, but less so than *euphrosyne*, and usually wherever latter is, though not *vice versa*". High Woods, Hawkenbury, 1948-58; Stone Cross near Ashurst, 1959 (C. A. Stace). [Groombridge (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1931-32: 59), may be Sussex.]

14. Tenterden (Stainton, *loc. cit.*). Sandhurst (Bull, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1944-45: 7). S.E. Kent [Sandhurst], August 8, 1928 (Bull, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1928-29: 85).

16. Hythe*, one, June 23, 1894, B. W. Adkin (Br. Mus. (S. Kensington)).

VARIATION.—An extreme ab. taken by E. Scott at Hoads Wood (div. 11), June 4, 1938, is melanic on the upperside except for the marginal fulvous spots, a small portion of the disc, and the subapical area of forewing. It was sitting on a rush at night, and was easily picked out by its underside which is also strikingly aberrant (C.-H.).

FIRST RECORD, 1831: Darenth and Birch Woods, more rarely than *euphrosyne* (Newman, *Mag. Nat. Hist.*, 4: 558).

¹It is certainly *not* generally distributed in Kent, and I have no confirmation of its occurrence "round Chislehurst and West Wickham from 1932 to 1946" (C.-H.).

[(**C. dia** L.: Weaver's Fritillary.

Very doubtfully genuine.

13. Southborough, on July 23, 1873, "I was fortunate enough to take two specimens of *Melitaea Dia* on thistles, in the open spots in a wood, in this neighbourhood; they were in fine condition, apparently just emerged from the chrysalis" (T. Batchelor, *Entomologist*, 6: 484.).]

Melitaea athalia Rott.: Heath Fritillary.

Native. Clearings in woods, heathy places; on *Melampyrum pratense*, *Veronica chamaedrys*. Locally abundant in 3; possibly still present in 8; extinct in all other recorded divisions.

Obs.—Occasionally, emergence is much protracted; thus at Paddock Wood (div. 3) in 1939, S. Morris and I observed both ♂♂ and ♀♀ flying on June 7, and at the same place that year several freshly emerged ♀♀ on July 27—a very late date (C.-H.). Smart (*Entomologist*, 67: 39) records a second emergence at Blean in September 1933; a rare occurrence.

The normal foodplant of this species in Kent is Common Cowheat (*M. pratense*). J. Shepherd, however, told me that he once noted the larvae at Blean feeding on Germander Speedwell (*V. chamaedrys*), after the *Melampyrum* had been mostly eaten up (C.-H.).

[1. Near London (Peckham), June 1803, ab. *eos* Haw., taken by J. Howard (Haworth, *Lep. Br.*, 1: 35). "Rather uncommon in the neighbourhood of London" (Stephens, *Haust.*, 1: 30). These records may refer to Surrey.] [(Bexley Wood, common, 1926-27, but introduced by L. W. Newman (B. K. West).)]

3. Present in suitable places in the extensive stretch of woodland lying between Dunkirk and Hoath. Colonies change their location within the area every few years so as to occupy fresh clearings. Especially beneficial to the continued existence of *athalia* is the practice of periodically cutting sections of wood, or "rotation cutting" as it is called. The species is notably absent from much of the isolated woodland in the southern portion of the division.

Faversham (Curtis, *Br. Ent.*, 386). Taylor's Hill, Hospital Wood, near Canterbury, 1856 (Harding, *Ent. week. Int.*, 1: 116). Blean Woods, swarming, June 2, 1857 (Stowell, *Ent. week. Int.*, 2: 94). Thornden Wood, June 11, 1865; Blean Woods, two, May 28, 1866, ninety, June 1-2, 1866 (Fenn, *Diary*). Church Wood, plentiful, 1921-30; on June 13, 1922, at Church Wood, a dozen imagines were seen and at the same time pupae and larvae were found in great plenty; Clowes

Wood, plentiful, 1926 (H. G. Gomm, *Diary*). "About 1927, M. Paris told me he once found 300 pupae in a ditch in Blean Wood" (A. M. Morley). West Blean Wood, 1935; East Blean Wood, 1938; Timber Wood, 1938; Paddock Wood, 1939-40; Barton Wood, 1936-39; Thornden Wood, 1939, 1956; Little Hall Wood, 1940; Church Wood, 1952 (C.-H.).

In 1936 at Barton Wood, during the last week of May, I found larvae abundantly feeding shortly before dusk on *M. pratense*. The breeding ground was situated in a part of the wood that had been cut a year or two before. A month later the butterflies were flying in profusion, and in the evening as many as five or six individuals could be seen at rest on a single rush stem. In 1937, the ground began to be overgrown, and the insect was consequently less numerous though still fairly plentiful; a few were seen in 1938, but in 1939 only three were noted. By 1940, *athalia* was completely absent at this locality, the ground having become so overgrown as to be altogether unsuitable for the continuance of the species. It is interesting, however, that in June 1940, the butterfly appeared in abundance in a freshly cut portion of Little Hall Wood, which adjoined Barton Wood (C.-H.).

6a. Chattenden Wood, June 1863 (Morris, *Week. Ent.*, 3: 286); found plentifully in early 1870's in one grassy glade at Chattenden Roughs, decreased 1875-80, final extinction 1880 (Walker, *Ent. Rec.*, 10: 102). [Darenth Wood, formerly (Sheldon, *Entomologist*, 58: 107). Sheldon gives no particulars, and there is no previous record to my knowledge for this formerly much worked locality. Was it introduced I wonder? (C.-H.).]

8. Dover (Rennie, *Conspectus*, 6). Near Deal; Combe Wood (Morris, *Hist. Br. Butts.* (1853)). Mystole, Denge Wood, about twenty, 1922 (H. C. Huggins).¹ Between Canterbury and Folkestone [West Wood], some taken by I. R. P. Heslop, c. 1931; one seen in Sibton Wood near Lyminge (1931) by C. H. Goodall (A. M. Morley). Gorsley Wood, Bridge, one c. 1946 (R. Gorer). [(Reinden Wood and Ellinge, some ♀♀ released in 1930; no evidence of survival (A. M. Morley).)]

[9. Isle of Thanet (Barrett, *Br. Lep.*, 1: 189); a most unlikely locality and almost certainly erroneous (C.-H.).]

12. "It is known that *athalia* could be taken locally in the Shadoxhurst woods before the war" (i.e. before 1914) (Scott (1936)).

14. Tenterden, "not uncommon but very local" (Beale, *Zoologist*, 4130); June 16, 1856 (Beale, *Ent. week. Int.*, 1: 91). Tenterden.—"Chief locality, Knock Wood. They are generally congregated in one particular spot—an open heathy place, where the undergrowth is of about one to two years' growth. The *metropolis* is mostly changed each year; for instance, I could point out four different places which have been occupied during the last four years. Stragglers are, of course, to be met with in other parts of the wood. They are generally fond of basking in the sun on thistles" (Beale, in Stainton, *Man.*, 1: 47). "Used to be abundant . . . in the south-west of the county in Knock Wood and other woods near Tenterden, and elsewhere on the borders of Sussex. It also occurred in other woods in the Weald"* (V.C.H. (1908)). (The italics are mine as indicating localities for which there are no previous records (C.-H.)).

[16. (Near Hythe, some taken in 1931, but said to have been introduced; no evidence of survival (A. M. Morley).)]

VARIATION.—According to Ford (*Butterflies*, 166, 295), Kent insects on an average differ slightly in appearance from those of Devon and Cornwall, as well as from the extinct Sussex race.

There is frequent minor variation as regards the extent of the dark marking and tone of ground colour; extreme aberrations, however, are always very uncommon. From the Blean area ab. *corythalia* Hb. (= *eos* Haw.) has been recorded by Watkins (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1941-42 (2) 32); and there are a number of records of ab. *cymothoe* Bartol. (= *navarina* Selys) (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1934-35: 51, 1945-46: 21, 1946-47: 44), including a specimen in Brit. Mus. (S. Kensington) labelled "Blean Woods, 1874, ex Farn coll." Johnson (*Entomologist*, 77: 30) records ab. *nigrathalia*, holotype ♂, Blean 1924. Williams (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1957: 87) states that many homoeotic examples "with a small area of hindwing colouring on the forewing (underside) have been taken at Blean".

The following aberrations are in R.C.K. and unless stated to the contrary it may be assumed that the specimens are from Blean.—*virgata* Tutt, 1922, 1931, Chattenden, 1866; *tricolor* Horm., bred 1926, 1934; *indigna* Cab., 1921; *obsoleta* Tutt, ten; *berisaliformis* Vty., thirteen; *atrovittata* Tur., fifteen; *radiata* Eisner, 1898; *latonigena* Spul., three; *cymothoe* Bartol. (= *navarena* Selys), 1924; *trans ad cymothoe* Bartol., four; *corythalia* Hb. (= *eos* Haw.), 1920, 1923. Undersides: *pseudaurelia* Ebert, two; *ligata* Carvel, three; *flaveolongata* Carvel, seven; near *sohana* Cab., 1934; *tetramelana* Cab., bred 1936; *subtusnigrescens* Carvel, seven; *postfuscofasciata* Goodson, two including holotype; *cinnamomea* Vorbr., 1933; *cymothoe* Bartol., 1936; *unifasciata* Carvel, three. Also a peroneural defect, 1924; and six homoeotic undersides.

FIRST RECORD, 1832: Dover (Rennie, *Conspectus*, 6), or Faversham (Curtis, *Br. Ent.*, 386).

¹H. C. Huggins told me that in 1922, C. Hoare of Mystole informed him that *athalia* had occurred there for the past thirty years (C.-H.).

M. *cinxia* L.: Glanville Fritillary.

Native; now extinct. Hilly fields and hollows on chalk, greensand undercliff [on *Plantago lanceolata*].

1. Birch Wood; near Dartford* (Stephens, *Haust.*, 1: 34).

8. Dover (Stephens, *Haust.*, 1: 34). Near Dover (Bree, *Mag. Nat. Hist.*, 5: 331, 334); 1851, in some plenty (Spilsbury, *Zoologist*, 3289); 1856, in some plenty (Harding, *Ent. week. Int.*, 1: 91). Alkham, 1857, "I have the pleasure of recording another locality for *Melitaea cinxia*. In a hilly field not far from here I have taken a few specimens since the first of this month" (Beale, *Ent. week. Int.*, 2: 92, communication dated 8.vi.1857). Near Dover, common, 1858 (Harding, *Ent. week. Int.*, 4: 100). Deal, plentiful, 1859 (Harding, *Ent. week. Int.*, 6: 91); 1860, "*Melitaea cinxia* last season was out plentifully on the 9th June; this season they were not out on the 1st July; they will not be plentiful this year: this and many of the early species appear to have died in pupa, in consequence of there being so little sun" (Harding, *Ent. week. Int.*, 8: 123). Dover district, 1861, "In localities where *M. cinxia* and *P. adonis* were taken by me in the greatest abundance last year not a

single representative has this season appeared" (Stonestreet, *Ent. week. Int.*, **10**: 186); "very common about 1863, not observed to my knowledge since" (Hall, *Ent. mon. Mag.*, **24**: 77). Cliffs near St. Margaret's Bay (W. O. Hammond, in Newman *Br. Butts.*). "Webb told me to-day *cinxia* is gradually disappearing from the Dover district" (Fenn, *Diary*, 19.x.1884). "A year or two before these butterflies were noticed at Folkestone, they appeared in almost countless multitudes in a hollow upon the cliffs east of Dover . . . a few were seen the next year but never afterwards" (Webb (1899)). "In the middle of the last century it was common on the Cliffs to the North-east of Dover and at Alkham. It disappeared from the former locality before 1890 and continued at Alkham until about 1895" (E. & Y. (1949)).

16. Folkestone,¹ 1858, on May 30, "this local insect made its appearance here in great profusion, but only on the Lower road to Sandgate, below the West cliff, and extending almost as far as Folkestone Harbour. They seem most partial to the bottom of the cliff where the narrow leaved plantain abounds". On May 31, "I captured upwards of fifty specimens" here (Cooper, *Ent. week. Int.*, **4**: 86); 1858, twelve (Drury, *Ent. week. Int.*, **4**: 102); 1859 (Gore, *Ent. week. Int.*, **6**: 107); seen several times (in 1865) (Briggs, *Ent. mon. Mag.*, **2**: 164). There are no records of its occurrence here since, and in 1868, an anonymous communication appeared (in *Qtly. J. Folkestone nat. Hist. Soc.*, 1868 (1), 24) which stated that "we have looked for it in vain", along the Lower Sandgate Road, and asked if any readers had met with it in the neighbourhood. In 1869, Knaggs (*Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 81) stated that "it has not been observed of late years".

FIRST RECORD, 1827: Stephens, *Haust.*, **1**: 34.

¹In Dale coll., is a specimen labelled "Folkestone" (*Ent. mon. Mag.*, **43**: 130).

Euphydryas aurinia Rott. (*artemis* Schiff.): Marsh Fritillary.

Native; perhaps extinct. Marshes, woods, chalk downs [on *Scabiosa pratensis*.]

The Marsh Fritillary has occurred very locally in a number of widely separated places in Kent, but except in one particular area, there is no evidence that it persisted at these for any length of time; the species in fact seems to have a curious habit of appearing suddenly in a new locality and of then dying out. It is known, however, to have been formerly present for many years in the marshes between Deal and Sandwich, and although long extinct at Ham Fen, there are mysterious reports of its having been seen since 1941 in marshy districts of north-east Kent, but in no case has it been possible to establish identification without a doubt.

Note:—The vast majority of Kentish specimens in collections undoubtedly come from Ham Fen, but the locality is nearly always disguised on the labels and in published records as "Sandwich", "Deal", "Eastry", "East Kent, or as just "Kent".

1. Near West Wickham, 1856 (Simpson, *Ent. week. Int.*, **1**: 116). The late T. L. Barnett told me that William West of Greenwich used to take it not uncommonly in Spring Park, West Wickham, about 1858, and that he remembered seeing the specimens in his collection (C.-H.).

[2. Francis Rose told me that he and John Sankey saw one on June

14, 1955, flying over some rough ground close to some marshes at Waterham, near Graveney (C.-H.).]

[3. Blean Woods, many from Hod Hill, Dorset, released by J. Shepherd, c. 1927-30; one or two seen c. 1938 (C.-H.).]

4. Taken in the neighbourhood of Deal or Canterbury*, and seen in 1831 in the cabinet of Miss Harvey of Upper Deal (Bree, *Mag. Nat. Hist.*, 4: 336). Near Sandwich, common in a marsh, 1865 (Harding, *Entomologist*, 3: 24). Abundant very locally in some marshy land between Deal and Sandwich (Hall, *Ent. mon. Mag.*, 24: 77). "According to Thomas Sorrel of Deal, it is now (1884) nearly extinct in the Ham Marshes, though it used to be abundant there" (Fenn, *Diary*). One labelled "R. Harbour, Deal, '88" (Harbour was a Deal collector (C.-H.)) (Br. Mus. (S. Kensington)). "I visited the marsh by Ham Ponds, Sandwich, in 1905, and saw three or four worn *aurinea* . . . when I went again in 1922 it was gone" (H. C. Huggins, *in litt.*). Fairly common near Deal until 1906 (E. & Y. (1949)). In my series of some forty-five *aurinea* from East Kent, two are dated 1893, and the others different years from 1902-07; many are bred (C.-H.). In Br. Mus. (S. Kensington) is a large ♀ labelled "East Kent v/10"; perhaps the last to have been taken at Ham Fen (C.-H.).

[Minster Marshes, in 1922, T. W. Gomm put down a lot of larvae and about twenty imagines from Brandsbury Common, Hants, but none were seen there subsequently (C.-H.).] ["Two imagines were seen by me at Plucksgutter, one day between 1942 and 1944" (J. Sankey (*in litt.*). The statement in E. & Y. (1949), that "quite recently . . . it re-appeared near some of its former haunts", is unconfirmed (G. H. Youden and B. Embry).]

[5. Shoreham, half way between Timberden Bottom and Cockerhurst, three taken by H. E. Hammond in 1939 out of six to eight seen (H. E. Hammond, *in litt.*). Introduced? (C.-H.).]

[6. North Kent, *Apanteles melitaeorum* Wilk., bred from larvae in 1950 (Hammond and Smith, *Ent. Gaz.*, 6: 172); these larvae were stated by J. H. Puxtey to have been taken by him in a chalk-pit between Northfleet and Greenhithe (H. E. Hammond, *in litt.*). Introduced? (C.-H.).]

7. Westwell Downs, one, May 17, 1857 (Russell, *Ent. week. Int.*, 2: 99). Boxley, one, in Maidstone Mus., [c. 1885] labelled "Boxley, H. Bartlett" (C.-H.).

8. [Barham Downs], several taken by J. P. Bartlett, 1845 (Bartlett, *Zoologist*, 1083). Rainden Wood (Knaggs, *Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 81). Folkestone, "Woods on the Canterbury Road" (Ulyett, *Simpson's Handbook to Folkestone* (1871)), may refer to the preceding record.

10. Near Sevenoaks*, 1857 (Farren, *Ent. week. Int.*, 2: 171).

[11. "Wateringbury" (Kaye, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1908-09: 80), is erroneous (W. J. Kaye, *in litt.*).]

13. Tunbridge Wells, one taken May 27, 1857 (Andrews, *Ent. week. Int.*, 2: 77). Boundes Park, near Tunbridge Wells, five taken, 1857 (Browne, *Ent. week. Int.*, 2: 99). Near the High Rocks, Tunbridge Wells, one only (Rev. H. Hockey, *vide* E. D. Morgan).

[15. "Early in 1928, Guy Mannering told me it occurred on some marshy ground where the Cotton grass grew near the Pits at Dungeness. He said that at Dungeness it was late in appearing (about mid-June),

but did not say how long ago this was. In June 1928, E. C. Joy and I had a good look by the Pits but could not find it" (A. M. Morley).]

VARIATION.—Kentish [Ham Fen] specimens in general have a rather characteristic appearance. In many the ground colour is more unicolorous, the dark markings less sharp, the wings often more narrow compared with *aurinia* from other British localities. Some Kentish *aurinia* exhibited by Turner (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1919-20: 94) were said to approach ssp. *provincialis* Bdv., in appearance.

Tutt (*Br. Butts.*, 316) mentions specimens from Sandwich in his collection which accord with ab. *artemis* Fab., and nymotypical *aurinia* Rott., but adds that only one or two are referable to the former, which he says exists only as a rare aberration in this locality.

The following abs. labelled "Kent" or "East Kent" are in R.C.K.:—*artemis* Fab., four; *brunnea* Tutt, bred, 1901; *virgata* Tutt, two; *deficiens* Cab., one, bred, 1906. Also (1) two ♀♀, 1908, with "ground colour dull reddish-brown"; (2) one, 1904, with "yellow areas well developed".

FIRST RECORD, 1832: Bree, *Mag. Nat. Hist.*, 4: 336.

NEMEOBIIDAE

Hamearis lucina L.: Duke of Burgundy.

Native. Wood borders and clearings; on *Primula vulgaris*. Local and seldom plentiful. Apparently now extinct in W. Kent (i.e. in 1, 6a).

1. Birch Wood; Wickham Wood (Newman, *Young England* (1860)). Wood at Chislehurst; West Wood (Newman, *Br. Butts.*). Joydens Wood.—H. J. Harding used to pay a yearly visit here in the 1860's when it was abundant (Fenn, *Ent. Rec.*, 6: 229) (Newman, *Br. Butts.*).

3. Thornden Wood, June 11, 1865; Blean Woods, Herne, May 16-June 3, 1866, took 29 (Fenn, *Diary*). Herne Bay (Butler, *Proc. ent. Soc. Lond.*, 1868: xxiv). Faversham, abundant (H. A. Stowell, in Newman, *Br. Butts.*). Blean Woods and elsewhere near Canterbury (*V.C.H.* (1908)). Blean, particularly Bossenden Wood, but uncommon and local (H. C. Huggins). Blean Woods, fairly plentiful (J. Shepherd). E. Blean Wood, plentiful, June 6, 1922 (Gomm, *Diary*). Cane Wood, c. 1946 (A. G. Maconochie). Trenley Park Wood, May 29, 1936; E. Blean Wood, May 28, 1937; Timber Wood, about six, May 14-15, 1938; plentiful, 1939; Paddock Wood, May 20, 1939; Hoath Wood, May 23, 1939; Kemberland, May 24, 1940 (S. Morris). E. Blean; Den Strood; plentiful, particularly c. 1928-32; one depositing on primrose (D. G. Marsh). Paddock Wood, several, worn, June 13, 1946 (C.-H.).

[6. J. F. Burton (*in litt.*) says that the record attributed to him in de Worms (*London. Nat.*, 1949: 78) is incorrect, i.e. he never reported it from near Eynsford.]

6a. [Shorne, 1822 (Arnold, *Robert Pocock*, 133).] Shorne, found by Mr. Adams (Pye, *Rochester Nat.*, 1896: 2 (51), 352). Collyer's Wood (W. Machin, in Newman, *Br. Butts.*). Darenth Wood, taken occasionally (Stephens, *Haust.*, 1: 29); formerly common, but long extinct (C. Fenn, in *V.C.H.* (1908)).

7. Belmont, near Faversham (H. C. Huggins). Westwell, one, June 7, 1930 (A. M. Morley). Westwell, scarce; Kingswood; Whitehill, a good locality (Scott (1936), Scott (1950)). Park Wood, Chilham, three, May 27, 1956 (E. Philp).

8. Folkestone (Ullyett (1880)); 1892 (Fellows, *Entomologist*, **25**: 322). Dover, exhibited by Knight and Allbuury at North Kent Entomological and Natural History Soc., June 8, 1892 (Webb, *Entomologist*, **25**: 176). Cockering Wood, 1893, 1894, 1895 (S. Wachter MS.). Penny Pot Wood, 1895 (S. Wachter MS.); fair numbers, June 5, 1940 (S. Morris, *Diary*); a few, 1947-48 (J. A. Parry). Near Wye (V.C.H. (1908)). Ellinge, near Swingfield, one, June 9, 1928 (A. M. Morley). Crundale, several, June 9, 1928 (A. M. Morley); July 7, 1941 (G. V. Bull, *Diary*). Reinden Wood, plentiful, worn, June 10, 1929 (Gomm, *Diary*); ten, May 28, 1930; seven, May 25, 1947 (A. M. Morley). Stowting; Wye (C. A. W. Duffield). Ewell Minnis, May 30, 1932, May 24, 1934; fairly common (J. H. B. Lowe); 1936 (A. M. Morley). Brook, common (E. Scott); common, 1959-60 (M. Singleton, M. Enfield, D. Youngs). Selstead, three, June 3, 1942 (A. M. Morley). Bridge, common, c. 1946 (R. Gorer). Lord's Wood; Waldershare (E. & Y. (1949)). Covert Wood, one, May 1955 (W. D. Bowden). Lydden, 1 m. to the S.W., on the downs bordering woods, several, May 21, 1950 (C.-H.).

11. Hoads Wood, June 3, 1923, May 29, 1928 (Bull, *Diary*); several, May 19, 1954 (P. Cue); Bethersden, four, 1950, three, 1951, one, 1957 (W. V. D. Bolt). Dering Wood, c. 1950 (B. G. Chatfield).

12. [Ashford district] Numbers of ova found annually, "yet although cowslip grows side by side and is practically as common as primrose in its localities, I have never yet seen a single egg on *Primula veris*, although I regularly looked for it" (Wood, *Ent. Rec.*, **17**: 157). Orlestone Woods, Ham Street, June 2, 1956, May 16, 1959 (R. F. Bretherton); two ♀♀, one ♂, June 6, 1956, at edge of Long Rope (C.-H.); one, 1960 (M. Singleton, M. Enfield, and D. Youngs). It is noteworthy that there is no occurrence at Ham Street to knowledge prior to 1956 (C.-H.).

13. Pembury (Stainton, *Man.*). Tunbridge Wells, a few, 1857 (Andrews, *Ent. week. Int.*, **2**: 77).

14. Tenterden (Stainton, *Man.*).

VARIATION.—The following abs. are in R.C.K.:—*parvifulvior* Vty., one, "Canterbury, 1902"; *albomaculata* Black., one, N. Kent, 1930; one, with "median band of fw. much reduced, hw. *semibrunnea* Osth.", Blean Woods, 1931.

FIRST RECORD, 1822: Shorne, "May 19 . . . got also the grizzle or brown fritillary, which is not plentiful" (Arnold, *Robert Pocock*, 133). This probably refers to *lucina*, but if not, the date is 1827: Darenth Wood, Stephens, *Haust.*, **1**: 29.

LYCAENIDAE

Thecla betulae L.: Brown Hairstreak.

Native. Wood borders, hedgerows, bushy places, etc., on sloe, occasionally apricot. Formerly widely distributed, but now mainly confined to the Wealden district of south-east Kent, which area seems to have always been its metropolis.

1. Birch Wood (Curtis, *Br. Ent.*, 264) (Newman, *Br. Butts.*).

3. Near Herne Bay, two taken, August 1859 (Butler, *Ent. week. Int.*, **6**: 180). Occurs on the north side of Canterbury (Webb (1899)).

Occurs some years in numbers between Canterbury and Selling (Webb, *teste* Goss, in *V.C.H.* (1908)). West Blean Wood, J. Shepherd told me that he took a ♀ imago near the "Blean Gate", c. 1928, but that he had never heard of another in the area, though Dr. Twigg had beaten all over the district, sometimes in what appeared the most ideal spots (C.-H.).

5. Farnborough district*, 1946, "I have seen several flying along sloe hedges" (D. F. Owen, *in litt.*; Owen, in *de Worms, Lond. Nat.*, 1949: 72). Cudham, one taken, 1953 (L. W. Siggs).

6a. Darenth Wood (Stephens, *Haust.*, 1: 76); several taken, August-September 1856 (Harding, *Ent. week. Int.*, 1: 197); several, September 6, 1857 (Baldwin, *Ent. week. Int.*, 2: 196). Dartford*, two ♀♀, one ♂, July 30-August 8, 1882, bred from larvae, "G.T.B." (Br. Mus. (S. Kensington)). Dartford* (*V.C.H.* (1908)). Collier's Wood, Greenhithe, September 1845 (Stevens, *Zoologist*, 1787). Shorne, 1904 (H. C. Huggins). Chattenden, larva, May 30, 1874, A. H. Jones; June 10, 1882, A. W. Mera; May 12, 1893, B. A. Bower (Tutt, *Br. Lep.*, 9: 290); uncommon (Chaney (1884-87)); found rarely (Walker, *Ent. Rec.*, 10: 101).

7. Woods and lanes about Sheldwich (H. A. Stowell, in Newman, *Br Butts.*). Westwell, first noticed in 1942 by G. V. Bull; now well established (Scott (1950)); common, 1953 (E. Scott). Bredhurst (Woodcock, *Rochester Nat.*, 1948: 6 (133), 4).

8. Folkestone* (Ullyett, *Simpson's Handbook to Folkestone* (1871)). Eastray neighbourhood, larva, once (W. O. Hammond, in Newman, *Br. Butts.*). Crundale, one, August 1938 (J. S. Wachter MS.). Brook, larva on apricot in garden, 1950 (C. A. W. Duffield); established in 1953 at Brook and Wye (E. Scott). Hastingleigh, larva on sloe, 1954 (B. K. West).

9. Thanet*, 1901, eight larvae (Barrett, *Entomologist*, 34: 318).

11. Bethersden, bred 1923, 1928; larvae beaten June 1929, 1931, 1932; ova, March 1, 1935, including one "on a long thorn"; Hoads Wood, larvae, June 2, 1935; Main road, Sandhurst to Ashford*, ♀ taken August 27, 1942, "first imago seen wild" (Bull, *Diary*). Hoads Wood, 1953; High Halden, 1953 (E. Scott).

12. Near Ashford*, 1857 (Russell, *Ent. week. Int.*, 2: 189); many larvae, 1896, 1901, 1902, 1905, 1907 (A. H. Wood, in Tutt, *Br. Lep.*, 9: 290). Taken commonly by Col. Irby on railway banks near Ham Street station (*V.C.H.* (1908)). Common over a wide area between Ashford and Appledore (Bull, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1942-43 (2): 4). Orlestone Woods, ♀ seen, August 29, 1930, ova found in numbers, April 24, 1938 (A. M. Morley), larvae noted almost annually since 1946, though not plentifully, beaten from lower branches of sloes growing by roadside; Carters Wood, Ham Street, a few larvae, 1948 (C.-H.).

13. Sissinghurst, 1891 (Bowell, *Ent. Rec.*, 3: 63). Southborough (M. M. Phipps, *teste* E. D. Morgan in Given (1946)).

14. Knock Wood, one, 1851 (Beale, *Diary*). Tenterden, two (Beale, *Zoologist*, 4130). Sandhurst.—Widespread to Appledore Heath, ova, December 7-8, 1941; Marsh Quarter and Lomas Stonepit, ova, January 5, 1942; plenty of ova along roads about Woodchurch and Knock Wood, January 29, 1942; ova, Heronden Farm, January 8, 1942 (Bull, *Diary*).

15. Ham Lees, ovum, March 7, 1942; Small Hythe, on edge of marsh, a larva, June 26, 1950 (Bull, *Diary*).

VARIATION.—The following three aberrations are in R.C.K.:—(1) ♀, "orange dusted with black scales", N. Kent, 1931; (2) *trans. ad fisoni* Wheel., Chattenden Roughs, 1861, T. W. Wood; (3) ♀, underside, "white outlined with leaden scales", N. Kent, 1922.

FIRST RECORD, 1828: Stephens, *Haust.*, 1: 76.

T. quercus L.: Purple Hairstreak.

Native. Woods, parks, hedgerows, bushy places; on oak. Frequent in 3, 6, 6a, 7, 8, 11, 12, 14; less so in 1; few records for 5, 10, 13, 16. Decidedly more plentiful some years, and then particularly numerous in favoured areas, as in e.g. 3, 6a, 12.

"Generally distributed in oak woods in the county, but has disappeared from, or become very scarce in, the London district" (V.C.H. (1908)).

Obs.—At Broad Oak (div. 3), larvae sometimes beaten from old pollarded oaks in a laneside hedge, a mile or so from the nearest wood; also in numbers in 1947 from comparatively young bushy oaks growing in a field (C.-H.).

A. M. Morley (*in litt.*) states that at Hunts Wood (div. 14) in 1949, he beat out a larva on July 7, a remarkably late date.

Bull (*Entomologist*, 70: 146) records two ♀♀ at light near Sandhurst, August 4, 1931; a ♀ also appeared at my m.v. at Ham Street, July 26, 1951; one suspects, however, that in each case the butterfly was disturbed (C.-H.).

1. Recent records for this div. are:—Dartford Heath, larva (L. T. Ford). Farningham Wood, 1939 (Kidner, *Diary*); 1952 (A. H. Heselden). Elmstead and Joydens Woods, fairly plentiful, 1946-47 (D. F. Owen, in de Worms, *Lond. Nat.*, 1949: 73). Holwood Park, common, c. 1947 (J. F. Burton). West Wickham, one, c. 1950 (C.-H.). Petts Wood, common, 1951-52 (A. M. Swain).

2. Cooling*, larva (L. T. Ford).

5. Cudham (B. A. Bower, in Tutt, *Br. Lep.*, 9: 270). Chestfield (D. F. Owen, in de Worms, *Lond. Nat.*, 1949: 73).

9. Ramsgate neighbourhood* (Willson, *Entomologist*, 23: 139).

10. Brasted, fairly common (R. M. Prideaux). Hosey Common, larva, 1917 (Gillett, *Diary*). Westerham (Jacobs, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1931-32: 75). Knole Park and Sevenoaks, occasionally (F. D. Greenwood).

13. Pembury, common (Stainton, *Man.*); one, 1948 (C. A. Stace). Bedgebury Woods, ten, July 29, 1869 (J. C. Melvill, jun., *Compendium Entomologicum* MS.). Tunbridge Wells (E. D. Morgan); single specimens only, in 1953 and 1954 (C. A. Stace). Bedgebury and Goudhurst, c. 1950 (B. G. Chatfield).

16. Hythe Old Golf Course, ♂, August 5, 1951 (C.-H.). Folks Wood, near New Inn Green, larvae, May 31, 1951 (A. G. Riddell, *teste* A. M. Morley).

VARIATION.—The following ab. is in R.C.K.:—*violacea* Niep., ♂, N. Kent, 1929. Also a pathological ♀, N. Kent, 1929.

De Worms (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1929-30: 33) exhibited a ♂, alar expanse 24 mm., taken Blean Woods, 1928.

FIRST RECORD, 1815: August 13, 1815, "walked to West Wood with Mr. Hatchett and Co., who caught the purple hairstreak butterfly" (Arnold, *Robert Pocock*, 109).

***Strymonidia w-album* Knoch: White-letter Hairstreak.**

Native. Wood borders, avenues, hedges, etc.; on *Ulmus glabra*, occasionally *U. procera*. Very local. Abundant some years, but subject to considerable numerical fluctuation.

1. West Wickham, bred 1857, from pupa found on Wych elm (Tugwell, *Ent. week. Int.*, **3**: 11); larvae, 1858 (Bryant, *Ent. week. Int.*, **4**: 100); 1900 (T. B. Fletcher, in Tutt, *Br. Lep.*, **9**: 176). Dartford* (West, *Ent. Rec.*, **18**: 143). Chislehurst, one, 1943 (S. F. P. Blyth). Joydens Wood, small colony (B. K. West). Holwood Park, common, 1948 (J. F. Burton, in de Worms, *Lond. Nat.*, 1949: 73). Bexley, several larvae, 1957 (R. L. E. Ford).

3. Near Herne Bay, one, August 1859 (Butler, *Ent. week. Int.*, **6**: 180). "Occurs on the northern side of Canterbury" (Webb (1899)). Chestfield, one only, a specimen on elm scrub (P. F. Harris).

5. Chevening, August 1, 1913, July 27, 1917 (Gillett, *Diary*). High Elms, larvae occasionally, c. 1952 (R. G. Chatelain).

6. Gravesend (E. Goodwin, in *V.C.H.* (1908)); June 30, 1923, thirty, June 18-29, 1925 (F. T. Grant). Shoreham, common some years (H. E. Hammond); several larvae, c. 1946 (W. A. Cope); larvae common (D. H. Sterling, in de Worms, *Lond. Nat.*, 1949: 73). Magpie Bottom, several seen (1948) (D. F. Owen); at least up to 1953 (J. F. Burton). Pinden, one, July 1942 (E. J. Hare). Near Eynsford, fair numbers in corner of one field, July 12, 1947 (D. F. Owen). Ash, several imagines, c. 1948 (Showler, *Ent. Rec.*, **67**: 210).

6a. Chattenden.—The following are some of the more noteworthy of the many records from here¹ and its neighbourhood:—Chatham [Chattenden] (see *First Record*); Chattenden Roughs, July 16, 1869 (J. J. Walker MS.); Four Elms Hill, flying in hundreds around tall elms and on bramble flowers, July 1-5, 1875, J. W. Tutt (Tutt, *Br. Lep.*, **9**: 179, *et seq.*); common in parts of Chattenden Roughs, and occurs in lanes between Upnor and Chattenden (Chaney (1884-87)); 1889, very local, but abundant (James, *Ent. Rec.*, **12**: 102); "I have found it abundantly in and near Chattenden Woods, and elsewhere in the neighbourhood of Rochester" (H. Goss, in *V.C.H.* (1908)); larvae exceptionally scarce, June 10, 1908 (Ovenden, *Ent. Rec.*, **20**: 186); larvae plentiful, June 1, 1925, eight at one beat (F. T. Grant). Northward Hill (1947) (D. F. Owen). High Halstow, numerous, July 1954 (Allen, *Ent. Rec.*, **67**: 154).

Darenth Wood, larva on elms near Fox and Hounds (Newman, *Br. Butts.*); fairly common (1947) (J. F. Burton, in de Worms, *Lond. Nat.*, 1949: 73).

7. Belmont, larva and imago (H. C. Huggins). Godmersham, not uncommon (J. Shepherd). Bredhurst Woods (Woodcock, *Rochester Nat.*, 1948: **6** (133), 4). Westwell (Scott (1950)). Eastwell Park (E. Scott).

8. Bridge neighbourhood, occasionally (W. O. Hammond, in Newman, *Br. Butts.*). Chilham Downs, one, August 1937 (C.-H.). Wye.—Crown, 1937; Old Racecourse, August 1937; Olantigh Park (E. Scott).

Barham, one, July 1945; Betteshanger—Eastry district (E. & Y. (1949)). Betteshanger, two seen including one taken, 1948 (D. F. Harle). Brook, 1947 (C. A. W. Duffield); taken, 1959 (M. Singleton). Petham (Scott (1950)). Dover, imagines, 1941 and 1942, ova on Wych Elm, 1942 (Gardiner, *Ent. Gaz.*, **10** (1), 5). Near Dover, one, July 26, 1952 (Gummer, *Ent. Rec.*, **65**: 25). Folkestone, six taken or seen at the foot of the Downs, August 5, 1955 (R. W. Fawthrop, *vide* A. M. Morley).

10. Near Ide Hill; Vallence Estate, Brasted; locally abundant (R. M. Prideaux, *in litt.*, 1950). Sevenoaks, occasionally in my garden (F. D. Greenwood). Sevenoaks Weald, a larva on English Elm, 1960 (E. Sadler).

11. Larkfield, one, July 25, 1900 (Saxby, *Entomologist*, **33**: 269). Staffhurst Wood, Edenbridge, imago fairly common, 1946 (F. D. Greenwood). Borough Green (c. 1948) (N. Thomas, *vide* C.-H.).

12. Hothfield Park, larvae (Scott (1936)).

13. Goudhurst, one, 1947 (W. V. D. Bolt).

14. Between Benenden and Iden Green, larvae and pupae on "Weeping Elm" in garden, June 14-15, 1926, larvae, May 12, 1927, May 27, 1942; Old Place, Sandhurst, two pupae on Wych Elm, June 14, 1942 (Bull, *Diary*).

15. Royal Military Canal.—Old Wych Elms grow along much of the length of the Canal, and the insect is widely distributed on them; indeed, one suspects it may occur there more or less wherever the tree is present (C.-H.); West Hythe, larvae and pupae, June 14, 1930 (Morley (1931)); thirty larvae beaten in 1932 by F. T. Gilliat (A. M. Morley); canal at Ham Street (Scott (1936)); canal below Warehorne and Kenardington, beat about thirty full-grown larvae, May 24, 1953 (C.-H.); Ham Street, by canal, many larvae, May 17, 1959, May 27, 1960 (R. F. Bretherton).

VARIATION.—It is recorded that Deal (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1942-43 (2): 28) exhibited an underside ab., bred from Shoreham, but unfortunately no description was published. One of my bred Kenardington males has the white W almost obsolete, thus closely approaching ab. *butlerowi* Kroul., but otherwise I know of no noteworthy variation in this species (C.-H.).

FIRST RECORD, 1857: Woods near Chatham, in considerable abundance (Crozier, *Ent. week. Int.*, **2**: 132).

¹A locality indeed so well-known for the butterfly that Tutt (*Ent. Rec.*, **20**: 143) thought fit to give the name CHATTENDENIA to the genus with *w-album* as the type species.

Callophrys rubi L.: Green Hairstreak.

Native. Wood borders and clearings, bushy places, downs, heaths, etc.; on *Cornus sanguinea*, *Sorothamnus scoparius*, *Lotus corniculatus*, *Hieracium pilosella*, *Helianthemum chamaecistus*, *Genista anglica*, Blackberry. Most frequent at the edges of woods and among scattered scrub on the chalk-hills of 5, 6, 7, 8.

In 1893, the imago was seen at Eynsford as early as April 3 (Carpenter, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1893: 108); and in 1951 at Lullingstone, as late as July 8 (A. H. Heselden). In the Chatham district, Walker (*Ent. Rec.*, **10**: 101) states that it is double brooded,

and gives it as appearing in May and August; despite this statement, however, it is considered doubtful whether the species in fact ever produces a second generation in Kent.

The larva has been found on Broom (*S. scoparius*) at Reinden Wood, July 7, 1929 (A. M. Morley), and in the Chatham district (Walker, *Ent. Rec.*, **10**: 101); also on Dogwood (*C. sanguinea*) (Frohawke, *Nat. Hist. Br. Butts.*, **2**: 58), at Chilham, June 24, 1938 (S. Morris, *Diary*), at Folkestone (Joy, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1905-06: 79); and on Mouse-ear Hawkweed (*H. pilosella*) (Darlow, *Ent. Rec.*, **65**: 19). The insect has been noted ovipositing on Common Rockrose (*H. chamaecistus*) in Folkestone Warren by Le Grice (Tutt, *Br. Lep.*, **9**: 100); and on Birdsfoot-trefoil (*L. corniculatus*) on the North Downs [Otford] by Prideaux (*Entomologist*, **49**: 255).

1. New Cross (Albin, *Nat. Hist. English Insects*, facing plt. 5). Shooters Hill and Bexley Woods, formerly (Fenn, *Ent. Rec.*, **6**: 229, published June 1895). West Wood; Erith; Orpington (Wool. Surv. (1909)). St. Pauls Cray, fairly common, 1918, one, 1943 (S. F. P. Blyth). Bexley, two, 1910 (Goodwin, *vide* Frohawk, *Nat. Hist. Br. Butts.*, **2**: 58); 1920 (Newman, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1920-21: 61). Joydens Wood, plentiful, 1946-47; Hayes Common, one, 1946; Sundridge Park (1947); Keston (1947); Shooters Hill (1947) (D. F. Owen). Greenwich Park, one, 1948; Abbey Wood, plentiful, 1948 (J. F. Burton); 1954 (A. J. Showler). Dartford Heath, several, June 5, 8, 1950 (A. Heselden). Petts Wood, 1950, 1952, frequent but local (A. M. Swain).

2. Sheppey, one, 1919 (*Betts, Entomologist*, **53**: 67).

3. Blean Woods, 1857 (Stowell, *Ent. week. Int.*, **2**: 94); 1866 (Fenn, *Diary*); fairly common (J. Shepherd). Bigbury Wood, 1893, 1896 (S. Wachter, MS.). Trenley Park, one, c. 1931 (C.-H.); fairly common, between 1946 and 1950 (D. F. Harle). East Blean Wood, June 20, 1936, beat a few larvae from plants of *Genista anglica*, growing in a meadow on the outskirts; Timber Wood, imago fresh, May 15, 1937; Paddock Wood, May 10, 1940 (S. Morris, *Diary*). Whitstable district (P. F. Harris). Thornden Wood, one, May 14, 1939 (C.-H.).

4. Preston, several, May 1950 (D. F. Harle).

6a. Darenth (Stephens, *Haust.*, **1**: 78); 1859 (Harding, *Ent. week. Int.*, **6**: 75); c. 1946 (D. F. Owen). Chattenden, 1869 (Walker MS.); 1899 (Russell, *Ent. Rec.*, **12**: 102); 1919, 1925, 1927 (F. T. Grant); plentiful (Woodcock, *Rochester Nat.*, 1948: **6** (133) 4). Swanscombe (B. K. West). Red Wood, Cobham, 1951 (J. F. D. Frazer).

9. Margate* (Barrett, in Tutt, *Br. Lep.*, **9**: 132).

10. Near Sevenoaks, 1913 (Prideaux, *Entomologist*, **46**: 327). Brasted (R. M. Prideaux). Sevenoaks, occasionally (F. D. Greenwood).

11. Tonbridge (H. E. Hammond). Marden (W. V. D. Bolt). Hildenborough, colony, 1957-59 (C. A. Stace). Biddenden, a larva on *Genista*, June 22, 1949, found by Rev. W. H. Leach (A. M. Morley). Hoads Wood (M. Singleton, M. Enfield, and D. Youngs).

12. Ashford*, 1896, 1900 (Wood, in Tutt, *Br. Lep.*, **9**: 121-122). Ham Street, one, May 21, 1939 (C.-H.).

13. Pembury, common (Stainton, *Man.*). Tunbridge Wells (E. D.

Morgan). Goudhurst (W. V. D. Bolt). Angley Wood; Frith Wood (B. G. Chatfield).

14. Tenterden (Stainton, *Man.*). Sandhurst; Woodchurch (G. V. Bull). Hawkhurst, 1956 (A. Lawson).

15. Royal Military Canal below Warehorne, two, May 24, 1953 (C.-H.).

16. Waterworks Wood, Folkestone, two, May 8-12, 1925 (Gomm, *Diary*). Folkestone Town, one in garden, May 17, 1945 (A. M. Morley)

VARIATION.—In my series from Chilham Downs (div. 8), where the butterfly has occurred to me plentifully, particularly in 1938, 1939, 1951, the majority of specimens conform to ab. *incompleta* Tutt and ab. *bipunctata* Tutt, several are nymotypical, one is ab. *punctata* Tutt, and one has the androconial mark whitish (C.-H.).

Chittenden (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1899: 10) exhibited one taken in the Ashford neighbourhood "with naturally brown underside", and thus presumably referable to ab. *brunnea* Tutt; and in R.C.K. is a single specimen of ab. *cinerascens* Rebel, Folkestone, 1901.

A pathological specimen, N. Kent, 1918, is in R.C.K.; and Tutt (*Br. Lep.*, 9: 99) records three pathological examples, one, Wrotham, 1901, two, Cuxton, 1893.

FIRST RECORD, 1720: The larva taken "near New-Cross in Kent, feeding on the Inside of the Black-berry Buds" (Albin, *Nat. Hist. English Insects*, facing plt. 5).

[*Lycaena dispar* Haw.: Large Copper.

Questionably Kentish.

With regard to the possibility of *dispar* having occurred in Kent of its own accord, it would appear that the only records worth considering are those based on the statements of A. H. Haworth. From these one might perhaps reasonably suppose the species to have been present in the extensive marshes of north-east Kent some 200 or more years ago.

In 1828, Stephens (*Haust.*, 1: 82) recorded a ♀ in the collection of A. H. Haworth, who he says informed him "that he obtained it many years since from the cabinet that was formed by a gentleman residing in Kent, and which contained scarcely any insect that was not the production of that county, thence called 'the Kentish Cabinet', which renders it probable, as Mr. Haworth surmises, that the true locality of this insect is in Kent".

In 1834, Dale (*Mag. Nat. Hist.*, 7: 176), referring to the specimens from which the illustrations in Wood's *Index Entomologicus*, plt. 2, fig. 58, ♂, plt. 3, fig. 58, ♀, were taken, wrote: "Mr. Haworth told me that they came out of an old cabinet, and were said to have been taken near Faversham".

In 1856, G. B. Wollaston (*Zoologist*, 5001) recorded that a ♂ and ♀ had been taken near Chislehurst (div. 1), but omitted name of captor, date and circumstances.

C. & J. Fenn (*Diary*, February 13, 1862) wrote that when examining Laing's collection, "we noticed a specimen of *C. hippothoe*¹ said to have been taken at Eltham" (div. 1); and at the meeting of the S. London Ent. Soc. on March 9, 1893, C. Fenn said that he had heard

of specimens of *Lycaena dispar* from Shooters Hill Wood, near Woolwich² (div. 1) (Fenn, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1893: 103).

At the same meeting above, W. H. Tugwell (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1893: 103), mentioned two specimens which he traced to the keeper of Saye and Seal Park (div. 10), also fifty or more years ago. W. G. Sheldon (*Ent. Rec.*, 8: 114) observed that at the Tugwell collection sale, there were two or three labelled in cabinet and catalogued as "Taken by Mr. Freeman, Say and Seal Park", and added that he did not see the undersides, but they were very small for "*C. dispar*", and, judging from the upper sides only, he would have pronounced them as "var. *rutilus*"]

¹Evidently the *hippotoe* of Lewin, and therefore synonymous with *dispar* L.

²Probably based on the Eltham record *antea*.

[**L. hippotoe** L. (**chryseis** Borkh.): Purple-edged Copper.

Doubtfully genuine.

In Debenham & Storr's catalogue of the sale on February 6, 1947, of the H. B. Smith coll., one finds at p. 5, under lot 55:—"Chryseis, a very good male, taken at Folkestone (ex H. Vaughan Coll.)".]

L. phlaeas L.: Small Copper.

Native. Chalk downs, sand dunes, rough flowery fields, grassy commons, waysides, heaths, woodland clearings, etc.; on *Rumex acetosella* (*sens. lat.*), [*R. acetosa*]. Found in all divisions, but seemingly most numerous in localities on well drained soil.

The butterfly is usually fairly common, particularly in the autumn, but is subject to very marked numerical fluctuation, dry hot seasons being apparently those in which it occurs in the greatest abundance. Thus, Stainton (*Ent. mon. Mag.*, 23: 67) states that at Lewisham (in 1868), it was so abundant that he counted 300 of the butterfly one morning on one long border of geraniums against a wall; Tutt (*Br. Lep.*, 8: 405) mentions having seen as many as a dozen or a score on a single small patch of thyme in full blossom in early August (1893) on the downs at Cuxton and Halling; Prideaux (*Entomologist*, 67: 191) records that at Brasted in 1933, although very scarce in early summer and not seen until June 15, it appeared in amazing profusion from about July 23 until the end of September, and that "whirling groups rose in front of one in all the rough trails and field paths", and that 8-10 could be counted on one tuft of late heather-bloom; and A. M. Morley (*in litt.*) writes that on Folkestone Golf Course, in 1943, a total of 758 imagines were counted in 14 days between September 12 and October 24, with a maximum number of 171 on October 10, and that in the autumns of 1944-45 at this locality the numbers were comparable.

There are probably two generations most years, but in favourable seasons three or possibly even a partial fourth. In 1893, the butterfly was noted at Tonbridge as early as April 15 (Turner, in Tutt, *Br. Lep.*, 8: 401); and in 1955, at Folkestone, as late as early November (Mrs. D. A. Macalister, *vide* Scott, *Ent. mon. Mag.*, 92: 72).

The chief foodplant may be Sheep's Sorrel (*R. acetosella* agg.). A. M. Morley (*in litt.*) writes that he found thirty-eight larvae on this on the Folkestone Golf Course, April 2-22, 1944, twelve, March 25-

April 6, 1945, and that twenty-five were seen April 1 and 3, 1946; and on September 24, 1945, five ova; and H. C. Huggins (*in litt.*) writes that he has found the ovum on this in Stockbury Valley (div. 7), late September 1921, and the larva on the same plant at Broadstairs (div. 9), June 1929. S. Morris (*Diary*) states that at Westbere Common (div. 3), he searched for ova on October 11, 1937, and found a spot where a few had been deposited on "Sorrel" [*R. acetosa*].

VARIATION.—In Br. Mus. (S. Kensington) are two specimens referable to ab. *cuprinus* Peyer: one, Otford, 1922, ♂, E. Kent, 1909. The much rarer ab. *schmidtii* Gerh., in which the ground colour is white, and not, as has so often been mistakenly supposed, straw-yellow, is represented in Br. Mus. (S. Kensington) by a single specimen from St. Margaret's (C.-H.). One, stated to be ab. *schmidtii*, taken Folkestone, 1934, by W. J. Austin, was in Crabtree coll. sale 14.11.1946; and in Giles coll. in Folkestone mus. is a white specimen (*Schmidtii*) taken Folkestone, 1895 (A. M. Morley).

Ab. *caeruleopunctata* Ruhl is fairly frequent in Kent. F. D. Greenwood (*in litt.*) remarks that a high proportion were this at Edenbridge in 1934; and A. M. Morley states that in the Folkestone district it is "by no means rare in females of later broods, but occasionally with early broods: thus, ♀, Dungeness, 30.5.1931, and ♀, Downs, 1934".

D. F. Owen (*in litt.*) mentions ab. *obsoleta* Tutt from Keston, September 1947; and I have an extreme ♂ ab. *suffusa* Tutt, which I took on Hayes Common, August 20, 1955 (C.-H.).

The following aberrations are in R.C.K.:—*ignita* Tutt; *trans. ad. anteroalba* Tutt; *intermedia* Tutt, five; *cuprinus* Peyer, four; *schmidtii* Gerh., three; *trans. ad. fuscata* Tutt; *eleus* Fab.; *imitia* Tutt, three; *suffusa* Tutt, six; *magnipuncta* Tutt, three; *parvipuncta* Strand, nine; *bipunctata* Tutt; *obliterata* Scudd., two; *latomarginata* Tutt; *caeruleopunctata* Ruhl, three; *basilipuncta* Tutt, two; *partimauroradiata* B. & L., four; *radiata* Tutt, two; *obsoleta* Tutt, two; *rectaserie* Lempke; *auronitens* Schultz; *juncta* Tutt, two; *extensa* Tutt, five; *fasciata* Strecker, two; *extensa-conjuncta* Tutt, Erith, 1903 (Frohawke, *Nat. Hist. Br. Butts.*, 2: pl. 46, fig. 29); *supra-radiata* Ob.; *major* Tutt. Undersides: *radiata* Froh. (*nom. preoc.* Tutt); *cuneifera* Schultz, three. Also numerous pathological uppersides.

Many other aberrations and pathological examples have been recorded (cf. *Entomologist*, 21: 133, 22: 211, 257, 279, 26: 295, 32: 284; *Ent. Rec.*, 21: 235; *Trans. W. Kent nat. Hist. Soc.*, 1905-06: 14; *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1909: 4, 1912-13: 7; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1896: 73, 1899: 109, 1900: 87, 1909-10: 91, 1914-15: 112, 1923-24: 131, 1926-27: 137, 1944-45: 18; 1948-49: 47; Stephens, *Haust.*, 1: 80; Frohawk, *Nat. Hist. Br. Butts.*, 2: pl. 46, fig. 24; Tutt, *Br. Lep.*, 8: 339, 356 *et seq.*).

FIRST RECORD, 1828: Birch Wood (Stephens, *Haust.*, 1: 80).

Lampides boeticus L.: Long-tailed Blue.

Immigrant. Gardens, comparatively seldom elsewhere; on *Uolutea arborescens*.

Altogether about twenty examples, many of them widely scattered throughout the county. No evidence of establishment, but in 1945 (in

which year some twelve specimens were noted), the species apparently survived to produce a generation.

1893: Between Dartford and Erith (div. 2), ♂ taken by C. E. Sabine on railway embankment settled on a flower, September 7 (Sabine, *Entomologist*, **26**: 300). 1898: Woolwich (div. 1), one taken in a drawing-room, September 29, exhibited by C. J. Brooks at North Kent Natural History Society (Webb, *Ent. Rec.*, **11**: 79). 1899: Deal, one sitting on a window, taken by J. H. Parry, September 16 (South, *Entomologist*, **32**: 281); [(Tunbridge Wells (South, *Entomologist*, **38**: 92), is erroneous (C.-H.).] [N.d.: Pembury, one taken, is unconfirmed (Knipe (1916)).] 1921: Dover, ♀, seen on a row of garden peas, and taken August 2, by F. E. Lane (Sloper, *Entomologist*, **54**: 244). c. 1929: Northdown Park, Margate (div. 9), one taken by G. A. Bowden (Bowden, *Rep. Thanet Fld. Cl.*, 1950: 24).

1945: Eddington near Herne Bay (div. 3), ♀, taken in a garden by D. G. Marsh, July 3 (Marsh, *Entomologist*, **78**: 158). Maidstone (div. 11), eight, of which 2 ♂♂, 3 ♀♀ were retained, emerged in August from a senna cutting "hanging up for future decoration" (Lawrence, *Entomologist*, **79**: 192). Goodnestone (div. 8), one, "flying around a large clump of perennial pea in the 'parsonage' garden", one day between September 2 and 7 (R. W. Parfitt, *in litt.*). Willesborough (div. 12), fresh ♀ taken in a garden by D. I. Milne, September 16 (Riley, *Entomologist*, **78**: 183). Faversham, fresh ♀, sitting on lavender, taken by A. D. Cox, September 24 (Rothamsted). Canterbury [Bridge], one taken by R. Gorer, October 30 (*Bull. Amat. ent. Soc.*, 1946: **7** (80) 83).

1950: Goudhurst (div. 13), ♀, taken at rest on buddleia, August 3 (Vaux, *Entomologist*, **83**: 224). 1957: Folkestone Downs, ♀, taken September 8 (Knight, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1957: 16).

FIRST SEEN, 1893: Near Dartford (Sabine, *loc. cit.*).

[**Everes argiades** Pall.: Short-tailed Blue.

Doubtfully genuine.

Included on the basis of a single record, too vague and lacking in essential detail, however, to be considered dependable.

8. Sidney Webb (in Evans and Bennet-Golding, *British Association Handbook to Dover* (1899), 108) lists it among other "excursionists" that have "appeared in or near Dover", and adds that its occurrence there "must be purely accidental".]

Plebejus argus L. (*aegon* Schiff.): Silver-studded Blue.

Native. Heaths; foodplant unknown. Very local.

13. Tunbridge Wells, thirty-six taken, July 1860 (Dart, *Ent. week. Int.*, **8**: 188). Pembury district, 1868, "swarming by thousands the third week of June" (Cox, *Entomologist*, **4** (62) ii). Tunbridge Wells Common, tolerably plentiful (G. H. Raynor, in Newman, *Br. Butts.*): 1941 (Hammond, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 32). Near Tunbridge Wells, on a breezy heath towards Broadwater Forest, August 3, 1896 (Tremayne, in Tutt, *Br. Lep.*, **10**: 230).

VARIATION.—In R.C.K. is an example of *ab. croceovirgatus* Tutt, Tunbridge Wells, 1906.

Cox (*loc. cit.*) notes that one of those captured measured only nine

lines, the spots on the underside being very faint, reminding one somewhat of *Cupido minimus*.

Ssp. **cretaceus** Tutt.

Native. Rough grassy places (often amongst scrub) on chalk downs and in chalky fields, uncultivated grassland on sandy gravelly soil, derelict sandpits, open woods on clay; [on *Lotus corniculatus*]. Very local. Most colonies on chalk, the only known exceptions being in 1 and 6a.

There has been a very marked decrease in certain localities since about 1949, notably in 6, 7, 8, and apparently amounting to total extinction in some colonies. It has been tentatively suggested that this decline may have been indirectly caused by the effect of myxomatosis in rabbits, i.e. an overwhelming of the foodplant owing to an increase in the growth of grasses consequent upon reduction in rabbit populations.¹

The times of appearance vary, sometimes appreciably, in different colonies, though these may be separated by only a few miles. A. M. Morley, for example, found that the butterfly regularly appeared earlier in the year at Temple Ewell and in Folkestone Warren, than at Reinden Wood.

1. Birch Wood (W. Machin, in Newman, *Br. Butts.*). Crown Woods on Shooters Hill (W. West, *Ent. Rec.*, **18**: 143). Dartford* (A. H. Wood, in Tutt, *Br. Lep.*, **10**: 244). Bexley.—B. K. West tells me that c. 1925, L. W. Newman informed him that he used to see it in the old sand workings, $\frac{1}{2}$ mile from Bexley (C.-H.). Dartford.—B. K. West tells me he found *argus* in three localities on the tertiary sand and gravel beds, all within $\frac{1}{2}$ mile of Dartford Heath, but not on the Heath itself. He says he first noticed it on July 21, 1947, and took two ♀♀; that it was fairly common in one locality, a sandpit now obliterated since about 1950, by 30 ft. of council refuse, and situated within 50 yards of the Heath; but existed in very small numbers at the other two places, which were a sandpit and an uncultivated grassy field adjoining the golf course. He says he last saw it in 1955, and has looked in vain for it since (C.-H.).

5. Knockholt (A. H. Wood, in Tutt, *Br. Lep.*, **10**: 244). Saltbox, Biggin Hill, numerous, c. 1928 (S. N. A. Jacobs); several worn ♂♂, ♀♀, July 28, 1948 (J. F. Burton); ♂♂ numerous, mostly worn, ♀♀ numerous, mostly fresh, July 6, 1952; July 3, 1954; two ♀♀, July 18, 1960 (C.-H.). Betsom's Hill, Westerham, ♂, June 21, 1942 (R. M. Prideaux); fairly numerous (1950); June 29, 1952 (R. C. Edwards). Badgers Mount, 1949, July 8, 1951, July 16, 1955 (L. W. Sigs); very common, 1960 (W. D. Hamilton). Polhill, fairly common (S. F. P. Blyth, *in litt.*, xii.1949).

6. Holly Hill, 1858 (Chaney (1884-87)); 1890 (Tyrer, *Ent. Rec.*, **1**: 207). Shoreham, June 20, 1888 (Fenn, *Diary*); various dates, 1895-1902 (Tutt, *Br. Lep.*, **10**: 229, 231); ♀, July 22, 1937 (Bull, *Diary*). Cuxton, 1893 (Tutt, *Ent. Rec.*, **4**: 249, 275; Tutt, *Br. Lep.*, **10**: 231). Maidstone district, chalk downs; Sevenoaks district (Tutt, *Br. Lep.*, **10**: 239). Birling, 1910-13, 1916, 1923 (F. T. Grant); 1951 (H. C. Huggins). Snodland (Mera, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1910: 15). Vigo Hill, July 16, 1924; Meopham Downs, August 2, 1939 (F. T. Grant).

Kemsing (Barnett, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1931-32: 80); very common, 1948 (T. L. Barnett); abundant, July 10, 1950; July 27, 1951; July 10, 1952 (B. G. Farrer and A. Heselden). Ryarsh, ♂, 1932, only one seen, perhaps a wanderer (J. Fremlin). Between Otford and Shoreham, "in a certain sloping field, on the east side of the Darenth river, this species was exceedingly abundant, especially in one corner. My friend, the late Geo. Wheeler with considerable European experience, had never seen it in such profusion. It cannot be said to have 'disappeared', as the whole and other fields near by were completely destroyed in 1943 from the flower and butterfly lovers' point of view, by 'bulldozers', leaving a pale grey plant-free subsoil, which was then sown with grain . . ." (R. M. Prideaux, *in litt.*, 30.10.1951). Magpie Bottom, fairly numerous, 1939 (A. R. Kidner, *Diary*); July 1949 (J. F. Burton); abundant, 1950 (H. E. Hammond). Otford, 1942-43, one, June 13, 1942, an exceptionally early date (J. S. Wachter MS.); 1950 (L. W. Siggs). Churchdown Wood, Fawkham, two ♂♂, August 5, 1944, perhaps wanderers (E. J. Hare). Near Hartley Woods, colony, 1952 (G. G. E. Scudder). Eynsford.—(*Wool. Surv.* (1909)); numerous dates, 1922-34 (Bull, *Diary*); fairly plentiful, 1930-34 (A. R. Kidner, *Diary*); R. M. Craske told me he used to find it about $\frac{3}{4}$ mile north-east of Upper Austin Lodge; and S. N. A. Jacobs says that an old locality for it and one visited on S. London meetings, is by the Gun Testing Range due north of Upper Austin Lodge (C.-H.); Upper Austin Lodge, about twelve, 1949 (H. E. Hammond); $\frac{1}{2}$ mile S.S.W. of Upper Austin Lodge, June 22, 1947, numerous (D. F. Owen). K. H. Bobe (*in litt.*) writes that he visited this spot in early July 1951, but could not find a specimen here or anywhere else along the valley; D. F. Owen and I visited the spot in 1952, and failed to see it, and I have purposely been on a number of occasions since without seeing it (C.-H.); along western border of The Birches, two ♂♂, July 5, 15, 1951; two ♂♂, one ♀, June 29, two ♂♂, one ♀, July 9, 1952 (A. Heselden and B. G. Farrer); numerous at this locality, 1955 (B. K. West).

6a. Darenth Wood (Stephens, *Haust.*, 1: 94). Swanscombe Park, the locality is on London clay, common. August 2, 1948, including many fresh ♂♂ (B. K. West); a few ♂♂, July 10, 1955 (C.-H.); 1960 (W. D. Hamilton).

7. Westwell, June 13, 1905 (J. E. Gardner, in Tutt, *Br. Lep.* 10: 229). "In many places on the chalk-hills on both sides of the Medway" (Tutt, *Br. Lep.*, 10: 238). Ashford* (A. H. Wood, in Tutt, *Br. Lep.*, 10: 244). Downs between Boughton Aluph and Godmersham, sparsely, pre. 1939 (A. H. Wood, *teste* E. Scott). Eastwell Park, a thriving colony, July 3, 1947, observed in 1953, but not in 1954 or since although looked for (E. Scott, *verbal communication*, 1961); a few ♂♂ and ♀♀ at rest on grass stems in dull weather, July 24, 1951 (C.-H.).

8. Dover.—(Bree, *Mag. Nat. Hist.*, 5: 335); common, July 18, 1833 (Stephens, *Ent. Mag.*, 1: 527); 1900 (Pickett, *Ent. Rec.*, 12: 272); Dover Cliffs, five ♂♂, one ♀, July 8, 1895, ♂, July 22, 1896, two ♂♂, July 24, 1898; Woolwich Wood, two ♂♂, July 8, 1896; Canterbury Road, ♂, June 26, 1901; Kearsney, ♂, July 16, 1905 (H. D. Stockwell, *Diary*). Ringwould, 1909 (Cardew, *Diary*). Deal very plentiful, 1858

(Harding, *Ent. week. Int.*, 4: 108); 1891 (Fenn, *Ent. Rec.*, 2: 203). Between Folkestone and Dover, on the cliffs, ♂, July 17, 1859 (Rogers, *Ent. week. Int.*, 6: 181). Near Canterbury* (Parry, *Entomologist*, 5: 394). Wooton, plentiful, July 16, 1932 (Gomm, *Diary*); ♂♂, ♀♀, fairly numerous, July 7, 14, 1938 (C.-H.). Alkham, 1932 (J. H. B. Lowe). Denton; Ewell Minnis; Kingsdown; St. Margaret's; Temple Ewell; Walmer (E. & Y.(1949)). Womenswold, 1950-51 (W. D. Bowden); about fifty ♂♂, some worn, four ♀♀, June 23, 1952; numerous ♂♂, one ♀, June 27, 1953 (C.-H.). Wollage Green; Shepherdswell; few fresh ♂♂, June 23, 1952 (C.-H.). Reinden Wood, "E. C. Joy first showed it to me here in 1928, where I gathered it had been known to a few collectors only, for a good many years; from 1928 to 1946 it was plentiful, perhaps 50 to 100 being there in a good day, but K. Self tells me that it has recently disappeared completely"; several, July 7, 14, 1928; many, all ♂♂, July 11, 1929; not very numerous, July 13, 1930; many July 13, 1946; a few, July 14, 1947; ♂, July 13, 1948 (A. M. Morley); I visited the locality, a rough grassy field adjoining the north-east border of the wood, in 1952, and subsequently, but failed to see it (C.-H.). Folkestone Warren, few, worn, August 1935 (C.-H.); many, June 23, 1945; five ♂♂, two ♀♀, June 25, twenty, July 5, many, July 23, 1946; ten, June 23, many including two ♀♀, June 26, 1948; six ♂♂, one ♀, June 20, singletons, June 27, July 23, 1952; three, July 28, 1955 (A. M. Morley). Swanton Lane, near Lydden, an old locality which Bailey the professional mentioned as one of his favourite places for *argus*; many, July 13, 1939; Temple Ewell, six, June 23, 1936; many, July 2, 1943; three ♂♂, one ♀, June 20, five ♂♂, one ♀, June 22, 1945; Etchinghill, ♂, July 4, 1954; "In 1928, Bailey told me he used to take it at Oxney Bottom, but I failed to find it there" (A. M. Morley).

[14. Tilden near Hawkhurst, A. Barber said he frequently saw it here c. 1940; one or two seen in 1946 or 1947 by B. G. Chatfield, but not taken (B. G. Chatfield, *in litt.*).]

VARIATION.—The form found in Kent (except in div. 13) is referable to ssp. *cretaceus* Tutt. Broadly speaking, this differs from the heathland (New Forest, Hants.) form, by its larger size; in ♂, brighter ground, narrower dark margin, especially on fw., and paler, silvery-blue (tending to whitish) underside; in ♀ underside, by whitish submarginal border of fw. and slightly paler ground.

Occasionally one finds as aberrations, specimens among *cretaceus* which show a tendency towards the heathland form. Thus, in a series of 44 ♂♂, 36 ♀♀, from Swanscombe, Dartford, and many chalk localities, one of the Biggin Hill ♂s and one of the Swanscombe ♂s, have the dark marginal band very broad (nearly 2 mm. on hw.); in two ♂♂, one from Snodland, the other Folkestone, the undersides are nearly as dark as those of a series from Brockenhurst, Hants.; and in one of the Biggin Hill ♀s, the whitish submarginal band on underside of fw. is absent (C.-H.).

Jones (*Proc. ent. Soc. Lond.*, 1905: xlv) exhibited a series of "*Lycaena argus* L. (*L. aegon* Schf.) var. *hypochiona*, a South European form" taken by him, July 16, 1905, on the chalk downs between Cuxton and Shoreham; and which he states (*Ent. mon. Mag.*, 41: 254) were determined as this by T. A. Chapman "upon examination of the

genitalia". Tutt (*Br. Lep.*, 10: 203), however, did not accept these as being *hypochiona* Ramb., and refers them to *hypochiona* Jones, and a synonym of *cretaceus*.

D. F. Owen (*in litt.*, 1947) writes that he has two ♂♂ from Otford district, in which "the black edges are replaced by white".

Sperring (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1925-26: 94; 1926-27: 134) exhibited "an extremely striated female", Maidstone district; and 7 ♂♂, 5 ♀♀, captured, Maidstone, 1926, showing "striation on undersides in all cases".

Ab. leodorus Gerh. is characterised by the absence of the metallic centres of the marginal spots on underside of hindwing, and is found more frequently in ♂♂ than in ♀♀. I have several *leodorus* from Eynsford, Shoreham, Snodland, Wootton, and Badgers Mount; the latter however is an exceptionally good locality for this aberration; thus, of 39 ♂♂, 7 ♀♀, which I collected there for examination, on June 29, 1961, 19 ♂♂, 1 ♀, conformed to *leodorus* (C.-H.).

Webb (*Entomologist*, 21: 133) records from near Dover, 1887: (1) "Three very pale specimens, the male almost mauve in colour, the females light brown"; (2) ♀, "with tips of all wings bleached"; (3) "Many females striated with male colouring and several gynandrous specimens"; (4) "The male *aegon* represented by pure deep blue, violet-blue, pure violet and pure light blue examples; of these we consider the violet-blue our type".

Walker (*Ent. mon. Mag.*, 43: 134) notes 2 ♂♂ from Dover in Dale coll.: one, "small pale lavender-blue", the other "very pale beneath with all the markings obsolescent".

Tutt (*Br. Lep.*, 10: 171, 204) mentions a specimen of *ab. lilacina* Tutt, in his coll., from Dover; *ab. pallida*, holotype ♂, Dover, 1898; also, several gynandromorphs from Dover.

Small (*Entomologist*, 37: 263) records a gynandromorph, left side ♂, right side ♀, taken near Canterbury, 1904; and another gynandromorph, exhibited by C. A. Briggs, is stated by Tutt (*Br. Lep.*, 10: 170) to have been taken, Folkestone, July 1875, and to be right side ♂, left side ♀.

The following aberrations taken in Kent are in R.C.K.:—♂ Uppersides: *caeruleus* Tutt, four; *pallida* Tutt, four; *lilacina* Tutt, seven; *obscura* Grund., two; *plumbeus* Tutt, three; *angustimargo* Vorbr.; *marginipuncta* Tutt, five; *disco-anterior* Tutt. ♀ Uppersides: *bina* Rost., three; *posteroceus* Tutt; *croceovirgatus* Tutt, two; *croceolunulatus* Tutt, two; *flavuslunulatus* Tutt, two; *albo-marginatus* Tutt, seven; *violescens* Tutt, two; *postero-caerulescens* Tutt, three; *caerulescens* Tutt, four; *croceovirgata-caerulescens* Tutt; *croceocaerulescens* Tutt, six and one bred; *croceopostcaerulescens* Tutt, five; *caerulea-cuneata* Eb., four. ♂ Undersides: *irregularis* Tutt + same characters on hw.; *flavescens* Tutt, four; *inornata* Grund, two; *postdiscoelongata* Wykes; *juncta* Tutt; *transversa* Wykes (peroneural). ♀ Uppersides: *magnipuncta* Tutt; *parvipuncta* Tutt; *inornata* Grund; *alboeremata* Wykes; *costijuncta* Tutt; *juncta* Tutt; *privata* Courv., two. Also the following:—Three intersexes, Dover, 1883, 1889 (the 1889 specimen with "Female genitalia. Abdomen not glued, no male hairs, traces of orange lunules, abundant androconia. Male underside", cf. *Trans. ent. Soc. Lond.*, 1922, pl. 6, fig. 3); mixed gynandromorph,

Dover, 1887; bilateral gynandromorph, Dover, 1889; ♀, 3 ♂♂, with homoeosis (one of the ♂s figured, *Trans. ent. Soc. Lond.*, 1926).

FIRST RECORD, 1828: Near Darenth Wood (Stephens, *Haust.*, 1: 94).

¹B.B.C. broadcast, March 5, 1961, where I proposed an investigation to discover if possible the cause of the recent decline in *argus* in Kent (C.-H.).

Aricia agestis Schiff. (*astrarche* Bergst.): Brown Argus.

Native. Chalk downs and hollows, rough pastures and flowery meadows on light soils, sandhills, saltmarshes, etc.; on *Helianthemum chamaecistus* [*Erodium cicutarium*, *Geranium dissectum*]. Frequent¹ in 5-9.

"Generally distributed in the chalk districts throughout the county" (V.C.H. (1908)).

In 1893, the imago was noted near Rochester as early as May 6 Tutt, *Br. Lep.*, 11: 286), and in 1911, at Birchington as late as October 3 (B. Smith, in Tutt, *Br. Lep.*, 11: 288), but despite this there does not appear to be any evidence of a third brood in Kent.

Harding (*Ent. week. Int.*, 6: 124, 9: 27) states that he found larvae at Deal on *Erodium cicutarium*; Newman (*Zoologist*, 6212; *Br. Butts.*, 123), however, says that the larvae from *E. cicutarium* sent him by Harding as *agestis* proved on rearing to be those of a coleopteron, *Hypera fasciculata*, but nevertheless admits the probability of larvae of *agestis* being in company there with those of the weevil. At Biggin Hill (div. 5), June 1, 1960, I watched a ♀ deposit several ova on leaves of Common Rockrose (*H. chamaecistus*) (C.-H.).

1. Greenwich Park, one, 1859 (Jones, in *Wool. Surv.* (1909)). Near Sydenham, two, 1859 (Cox, *Ent. week. Int.*, 6: 188). Lee, rare, C. Fenn (Buckell & Prout, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1898: 53). Bexley district, scarce (Newman, in *Wool. Surv.* (1909)). Bexley, one, 1921, one, 1923; Sidcup, one, 1926 (Kidner, *Diary*). Chislehurst, fairly common (S. F. P. Blyth). Dartford Heath (L. T. Ford); one, 1950 (A. Heselden). Dartford, fairly common (B. K. West). Sundridge Park, 1946-47, fairly common on overgrown banks and on borders of golf course; near Joydens Wood, in an overgrown ploughed field, plentiful 1946-47, especially second brood, 1946, "it was an easy matter to disturb scores of them, even on a very dull day"; Hayes Common, two, June 6, 1946, 1947; Shooters Hill Golf Course (D. F. Owen, in *litt.*, 1947). Farningham Woods, one, 1952 (A. Heselden). Hayes Common, one, August 21, 1955 (C.-H.).

2. Sheppey, 1900 (Fletcher, *Entomologist*, 34: 72); 1919 (Betts, *Entomologist*, 53: 67). Faversham* (Robertson, *Entomologist*, 52: 59). Sharnal Street, one, 1930 (Kidner, *Diary*). Abbey Wood Marshes, common, 1947; Dartford Marshes, colonies on river-walls, in rough fields usually on rather higher ground, in hayfields and on grassy banks and roadside verges; "in such places *Erodium* and *Helianthemum* are absent, but *G. dissectum* is common, and is, I believe, the usual food-plant of *agestis* here, although I have yet to prove this point" (Burton, *Lond. Nat.*, 1954: 57). North Kent marshes (Higham to Allhallows), "exists in isolated pockets" (Owen, *Entomologist*, 83: 120). Marshes between Higham and Allhallows, 1953 (Owen, *Ent. Rec.*, 65: 279). Nagden Marshes, near Faversham, two, worn, on the saltmarshes, August 28,

1958; Waterham, near Graveney, one, June 2, 1956 (C.-H.).

3. Near Herne Bay, abundant, August 1859 (Butler, *Ent. week. Int.*, 6: 180). Thornden Wood, fifteen, July 30, 1865 (Fenn. Diary). Trenley Park Wood, May 25, July 26, 1936; Sturry, June 1, 1937, May 14, 1938 (S. Morris, *Diary*). About Herne and Bloomfield, on scrub and rough ground (D. G. Marsh). Herne Bay district, common (J. Shepherd). Whitstable district (P. F. Harris). Trenley Park Wood, August 1941 (J. S. Wachter MS.).

4. Dover district, most plentiful perhaps on the Deal sandhills (Hall, *Ent. mon. Mag.*, 24: 77). Sandwich, on St. George's and Prince's Golf Courses, four, June 21, 1923 (Gomm, *Diary*). Richborough; Sandwich Bay dunes; fairly common (D. F. Harle, *in litt.*, 1960).

10. Brasted, a few (R. M. Prideaux, *in litt.*, 1950).

11. Borough Green, one, June 11, 1950 (C.-H.).

12. Orlestone Woods, one, August 16, 1952 (C.-H.).

13. Near Bullingstone, Speldhurst (Morgan, *Lepidoptera of Tunbridge Wells* MS.). Bedgebury (1950) (B. G. Chatfield).

14. Tenterden (Stainton, *Man.*). Marsh Quarter, near Sandhurst, August 8 and 12, 1940 (Bull, *Diary*). Gills Green, Hawkhurst, not uncommon (1950) (B. G. Chatfield).

15. Dymchurch, ♂, August 5, 1934; Beyond Jesson on some sandy land opposite Littlestone Golf Course, several, August 5, 1945 (A. M. Morley).

16. Hythe (Newman, *Ent. Mag.*, 2: 516); 1898 (Hill, *in* Tutt, *Br. Lep.*, 11: 286). Near Shorncliffe*, plentiful, 1859 (Rogers, *Ent. week. Int.*, 6: 180).

VARIATION.—Webb (*Entomologist*, 21: 133) describes two abs. from Dover, 1887, one with "discoïdal spot alone unobliterated upon primaries and three spots only on hind wings"; the other "normal on the upper but without ocelli on lower wings", and Briggs (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1887: 51) exhibited one, taken near Dover, 1878, apparently the holotype of ab. *deleta* Ck11.

Hards (*Entomologist*, 55: 260) states that he took a ♂ ab. *albimaculata* Harr., at Dartford, in 1922, and that in addition, the "anterior end of the marginal series of red spots on the upper side of the fore wing is conspicuously powdered with white".

Pickett (*Ent. Rec.*, 12: 272) records one, Folkestone, 1900, which became the holotype of ab. *suffusa* Tutt; and Tutt (*Br. Lep.*, 11: 258) gives ab. *impunctata* Obth., and states that the specimen of this that Oberthur figures, was taken at Folkestone, 1890.

Tonge (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1924-25: 125) exhibited ♂ ab. *obsoleta* Tutt, from Deal; and Tutt (*Br. Lep.*, 11: 237) mentions on the authority of Briggs, specimens from Folkestone, with al. expanse only 15 mm.

Frohawk (*Vars. Br. Butts.*, plt. 27, fig. 7) depicts a ♀ upperside ab., Herne Bay, 1932, having the marginal series of spots pale yellow, which he calls *straminea-marginalis*.

A. M. Morley (*in litt.*) writes that he has taken in div. 8, ab. *crassipuncta* Tutt, ♀; ab. *obsoleta* Tutt, 2♂♂, 2♀♀; and adds that a ♂ ab. *caeca* Blach., taken by S. G. Hills, Folkestone, 1907, was in B. W. Adkin coll. sale, December 13, 1948.

The following abs. are in R.C.K.:—Uppersides: *semi-allous* Harr..

Cudham, 1886, Folkestone, 1923; *snelleni* Ter-Har., Folkestone two, 1923, Cudham, 1886; *lilliputana* Oberth., Cudham, 1885; one with "lunules orange-yellow", Kent, 1933. Undersides: *retrojecta* Lempke, Herne Bay, 1933; *obsoleta* Tutt, Wye, 1933; *subtusradiata* Oberth., Folkestone, 1900.

FIRST RECORD, 1828: Near Dover (Stephens *Haust.*, 1: 95).

¹But is apparently seldom noted very plentifully. A. M. Morley (*in litt.*) writes that the most he ever saw in one day was fifty, on the Folkestone Downs, August 18, 1935, an exceptionally large number.

Polyommatus icarus Rott.: Common Blue.

Native. Chalk downs, grassy wayside banks, flowery meadows, etc.; on *Lotus corniculatus*. Plentiful in all divisions.

The first brood appears in May and June, followed by a second one in August and September. I have no evidence of a third generation in Kent, but there are indications that in favourable years this may occur. The butterfly was noted in 1911, at Birchington, September 20-October 3 (Tutt, *Br. Lep.*, 10: 222); at Sidcup in 1921, as late as October 9 (Kidner, *Diary*); and A. M. Morley (*in litt.*) says "I have no doubt that in some years there is a third brood, as I have seen it as late as September 30 (1931 and 1933), and September 29 (1946). These late specimens are on the average appreciably smaller than earlier broods". Bull (*Ent. Rec.*, 69: 197) records the appearance of the butterfly in his garden at Sandhurst on April 1, 1957, an exceptionally early date, but one suspects that the species seen was *Celastrina argiolus*. Webb's record (*Entomologist*, 31: 120) of its supposed appearance at Dover on February 15, 1898, is probably due to an error.

Deal (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1943-44: 10) reported that he had seen a pairing between ♀ *P. icarus* and ♂ *Lysandra coridon*, at Shoreham, July 28, 1943. He induced the ♀ to lay ova, but these proved infertile.

I have found the full-grown larva on Birdsfoot-trefoil (*L. corniculatus*) at Meanfield Wood, Shoreham (div. 5), July 5, 1957; and Dr. E. Scott tells me he has found it on this at Westwell (C.-H.).

VARIATION.—"Kent specimens seem to be well marked and, on the whole, of average size, smaller than some I have taken in the Cotswolds and much smaller than those I have from Ireland, Scotland and Norway" (A. M. Morley).

In Goodwin coll. is a striking ♀ underside ab. with heavy and extensive striations, labelled "Dover, v. 1897, J. R. Hale" (C.-H.).

The following notes on its variation in the Folkestone area have been received from A. M. Morley:—

"There seems to be no notable variation in the colour of ♂ uppersides, but among specimens in the Crabtree coll. sale was 'a male mauve specimen,' Folkestone, June, 1909. On the other hand, there is great variation in ♀ uppersides; purely brown ♀♀ are very rare on the chalk; some ♀♀ are completely blue—abs. *caerulea* Fuchs, and *amethystina* Gillm.—a rare form of the former is ab. *clara* Tutt, of which I have two, one, Wye, May 30, 1934, one, Folkestone Downs, June 21, 1946. The blue or bluish ♀♀ are often marked with white in various ways, and I have nine named varieties of such specimens. Among the all brown ♀♀, there is a rather pale form with conspicuous yellow lunules on forewing.

The undersides show infinite variation—K. Self has a ♂ which conforms to ab. *albescens* Tutt plus the equivalent of ab. *fowleri* South in *Lysandra coridon*, Folkestone, 1948; a remarkable melanic underside, Ringwould, 1959; and a ♂ equivalent to ab. *nubila-fumidescens* B. & L. in *L. coridon*, Folkestone, 1939; and I have two equivalent to ab. *antifowleri* B. & L. in *L. coridon*, a ♀, Wye, 1938, and a ♀, Folkestone, 1928. Regarding underside spotting, ab. *arcuata* Weym. is far from rare, while the equivalent of ab. *i-nigrum* Tutt in *L. coridon* seems to be the reverse, since I have only taken it twice in the form equivalent to ab. *i-nigrum-arcuata* B. & L. of *L. coridon*. Of the major abs. may be mentioned *transiens* Obth. approaching *radiata* Courv., of which I have a ♂, Folkestone, June 10, 1938; and two *radiata* at Crabtree coll. sale: (1) Lot 161, "an extreme radiated male underside with all four wings heavily striated", Folkestone, 1922, S. G. Hills; (2) Lot 162, a fine ♂ *radiata*, though not so extreme as the previous lot, Folkestone, 1928, L. W. Newman. The only *radiata* I have taken is a ♂ with forewings heavily marked, Folkestone, Middle Hill, August 8, 1933; K Self has a ♀ *radiata*, left forewing, Folkestone, September 1948. Abs. with spots missing are rather rare, and *caeca* Gillmer is, I believe, really rare; I took a good ♀, Folkestone Downs, August 27, 1932, and a ♂, Dover Hill, Folkestone, June 4, 1943. Regarding size, I have a ♀, al. expanse 34 mm., Sandwich, June 9, 1934, and a ♂ approx. same expanse, Folkestone Warren, August 7, 1937; undersized specimens of 24 mm. or thereabouts, are not rare".

The following aberrations taken in Kent are in R.C.K.:—Upperside ♂♂. *candraon* Bergst.; *livida* Gillm.; *minor* Cockerell. Upperside ♀♀. *anticaelunata* Vty.; *oceanus* Bergst.; *caerulescens* Wheeler; *caerulea* Fuchs; *thestyli* Kirby; *supracerulea* Ob.; *fusca-thetis* Tutt; *pallescent* Tutt; *rufina* Ob.; *auro-extensa* B. & L.; *minor* Cockerell; *major* Tutt. Undersides. *melanotoxa* Pine-Mar; *biarcuata* Fritzsche; *semiarcuata* Courv.; *regnieri* Andre; *polyphemus* Esp.; *costajuncta* Tutt; *costo-retrojecta* Courv.; *basijuncta* Tutt; *apicojuncta* Tutt; *transiens* Tutt; *trans. ad extensa* Tutt; *excessa* Gillm.; *grisescens* Tutt; *brunnescens* Tutt; *cervinescens* Tutt; *lutescens* Tutt; *aurantescens* Tutt; *barnumi* Dujardin; *parvipuncta* Courv.; *tripuncta* Courv.; *elongata* Courv.; *postico-obsoleta* Tutt; *semipersica* Tutt; *obsoleta* Gillm.; *albescens* Tutt + *radiata* Courv.; *subtus-radiata* Ob.; *radiata* Courv.. "plus elongated basal spots". A homoeotic example, "blue of upperside on underside right hindwing", Herne Bay, 1933. Also the following gynandromorphs. Four bilateral gynandromorphs: (1) rt. side ♂, Dover; 1881, Bailey; (2) rt. side ♂, Folkestone, 1875, T. Williamson; (3) rt. side, ♀, Dover, 1888, Bailey; (4) rt. side ♀, Dover, 1897, F. Chatwin. Two mixed gynandromorphs: (1) Near Chatham; (2) Folkestone, 1915.

Numerous other abs. and abnormal specimens have been recorded (cf. *Entomologist*, 21: 133, 30: 296, 70: 67; *Ent. Rec.*, 10: 101, 21: 295, 22: 20; *Ent. Mon. Mag.*, 12: 166; *Ent. Mag.*, 3: 304; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1887: 51, 1888: 65, 1889: 165, 1891: 126, 1916-17: 119, 1937-38: 22, 1946-47: 36; Tutt, *Br. Butts.*, 175-176; Frohawk, *Nat. Hist. Br. Butts.*, 2, plt. 49, fig. 23; Barrett, *Lep. Br. Isles* 1: 79, plt. 11, figs. 2c-2f; Tutt, *Br. Lep.* 11: 116 et. seq.).

FIRST RECORD, 1828: Stephens, *Haust.*, 1: 91, 93 (Cf. Tutt, *Br. Lep.*, 10: 115; Wood, *Index Entomologicus*, 8; Westwood, 1841, *Br.*

Butts., 111-114). A more certain identification dates from 1831: Dover (Bree, *Mag. Nat. Hist.*, 5: 335).

[*Lysandra argester* Bergstr. (*hylas* Esp. *dorylas* Schiff.).

Doubtfully Kentish.

Some uncertainty exists as to specific identity in the early records; and there is considerable distrust respecting provenance in the case of the later ones.

In 1795, Lewin (*Insects of Gt. Britain*, 78, pl. 37, figs. 4-6) figured a "blue" under the name *hyacinthus*, and wrote: "I met with this new species of butterfly in the middle of July, flying on the side of a chalk hill, near Dartford in Kent; and have no doubt that there was a constant brood at this place, as I found them there for two successive years on the wing, in the middle of the same month".¹

Stephens (*Haust.*, 1: 90) records a species under *Polyommatus Dorylas*?, which he states was taken with *bellargus* "at Darenth, in June, 1812", but was "not met with afterwards". Doubleday (*Zoologist*, 8467), however, states that he examined the specimens in the J. F. Stephens coll. which were considered referable to *hyacinthus* Lewin, but they were certainly not that, only "ordinary specimens of Adonis". Curtis in his *MS Register* has: "*L. Dorylas* W.V., June, Darenth, not British" (Walker, *Ent. mon. Mag.*, 40: 192).

At Sydney Webb coll. sale, December 9, 1919, "a specimen of the Continental species *dorylas* labelled Folkestone, 1863² . . . realised 25s. with another lot included" (Russell, *Ent. Rec.*, 32: 34).

Sloper (*Proc. ent. Soc. Lond.*, 1902: 32) exhibited a specimen of *L. argester*, which he said he took at Dover on September 7, 1902, but added (*Ent. Rec.*, 15: 133, *communicated from Aigle, Switzerland*), that it had been in his bottle seven days before he noticed it. The specimen, a ♂, is labelled "Dover, 7.9.02", and is in R.C.K.³ (C.-H.).]

¹Ochsenheimer (*Die Schmett.*, 1 (2), 35) referred Lewin's figures to *L. argester*, and Doubleday (*Zoologist*, 8402) stated that they "most certainly represent the sexes" of that species, a view likewise held by Knaggs (*Ent. Ann.* 1864: 120), and Walker (*Ent. mon. Mag.*, 43: 132). Lang (*Butts. of Europe*, 123), however, pointed out the close resemblance of *argester* to *P. icarus* ab. *icarinus* Scriba, and suggested that specimens of that insect had been confounded with it. Tutt (*Br. Lep.*, 11: 341) treated Lewin's species as an ab. of *L. bellargus* (q.v.), as did Bollow (in Seitz, *Suppl. Pal. Rhop.*, 280); Westwood (1841, *Br. Butts.*, 107), on the other hand, considered it synonymous with *P. icarus*.

²N.B. It is somewhat significant that in January 1863, Doubleday (*Zoologist*, 8402) remarked that it "will probably be met with in the coming summer"!

³Sloper collected abroad (his collection of foreign Lepidoptera is in Dover Museum), and one suspects he accidentally imported the specimen from the Continent in his killing bottle. Moreover, the wings on one side are very noticeably discoloured, as might be expected if it had been lodged for some time under the wool and in contact with cyanide condensation as I suggest may have happened (C.-H.).

Lysandra coridon Poda: Chalk-hill Blue.

Native. Downs and rough grassy places on chalk, also casually off the chalk¹; on *Hippocrepis comosa*. Locally plentiful in many areas in 6, 7, 8.

The butterfly appears as a rule in the last week of July, reaches its

maximum fairly early in August, and lasts until the first or second week of September. In exceptional years, however, it has been noted much earlier, as on June 21, 1891, at Eynsford (Turner, in Tutt, *Br. Lep.*, **10**: 85); and much later, as at Deal on October 4, 1860 (Harding, *Ent. week. Int.*, **9**: 27).

My records show that the larva has been found on a number of occasions by various observers, always on *H. comosa*. A. M. Morley (*in litt.*) writes that unless one is acquainted with their habits one is not likely to find them. He says that after looking for them unsuccessfully in various places by day and night, he tried the Folkestone Downs just before dusk, June 4, 1947, and soon found them starting to feed, many having small ants *Lasius flava* on their backs; he put fourteen in a pot of *H. comosa*, having first removed the ants, and they came through all right, but were all type.

1. Beckenham, ♂, August 6, 1887 (Reid, *Entomologist*, **20**: 230). Brockley, solitary examples on railway banks (West, *Ent. Rec.*, **18**: 143). Orpington*, larvae, 1906 (W. Barnes, in *Wool. Surv.* (1909)). Pett's Wood area, 1935 (F. Swain in de Worms, *Lon. Nat.*, 1949: 70), Lewisham, two, August 1946; Shooters Hill, two, 1946 (D. F. Owen). Pett's Wood, one, July 25, 1947 (A. M. Swain).

2. Plumstead Marshes, exhibited by H. Webb at N. Kent Entomological Soc., November 24, 1887 (Webb, *Entomologist*, **21**: 23). "At one time not rare in the Isle of Sheppey on the stiffest clay" (Walker, *Ent. Rec.*, **10**: 101).

3. Near Herne Bay, one, August 1859 (Butler, *Ent. week. Int.*, **6**: 180). Thornden Wood, one, July 30, 1865 (Fenn, *Diary*). South Street, Whitstable, two ♂♂ seen the same day (P. F. Harris).

4. Sandwich, ♂ in clover field, 1946 (Batchelor, *Entomologist*, **83**: 94). Sandwich Bay, one, August 28, 1953 (D. F. Harle).

5. Chevening, 1858 (Stanhope, *Ent. week. Int.*, **4**: 156). Farnborough (Alderson, in *Wool. Surv.* (1909)). Westerham (R. C. Edwards). Biggin Hill, 1947 (J. F. Burton); ♂, August 18, 1951 (T. L. Barnett).

6a. Near Darenth Wood*, one, July 30, 1865 (Fenn, *Lep. Data MS.*). Chattenden Roughs, on clay (Chaney (1884-87)); odd specimens on the tertiary clay (Tutt, *Entomologist*, **20**: 322; *Br. Lep.*, **10**: 95).

9. Ramsgate; in great numbers, 1856 (Powell, *Ent. week. Int.* **1**: 197); very abundant, 1859 (Wormald, *Ent. week. Int.*, **7**: 52). Near Margate, 1870 (Cox, *Entomologist*, **5**: 166). Birchington, a stray ♂, c. 1931 (C.-H.).

10. Brasted Chart, "during the past forty years I have repeatedly met with isolated males . . . four to six miles from the nearest station on the North Downs". (Prideaux, *Entomologist*, **82**: 166).

13. Groombridge, two ♂♂, 1887; Broadwater Common, ♂ flying amongst heather, 1883 (Blaber, *Entomologist*, **20**: 322). Pinewood Road, Tunbridge Wells, 2♂♂, in a field, 1956 (C. A. Stace).

14. Marsh Quarter near Sandhurst, August 20, 1937 (Bull, *Diary*).

16. Copperhurst near Aldington, ♂, at roadside, July 28, 1951 (C.-H.).

VARIATION.—Verity (*Ent. Rec.*, **38**: 123) described the race *insulana* from "near Sevenoaks" [Shoreham?]. It is said to resemble nymotypical *coridon* in its large size, broad wings and especially bold underside spotting; the ♂ upperside much paler and more lustrous, a purer sky blue

with very slight greenish admixture; marginal band uniformly black and usually rather narrow; underside greyish with very slight touch of fulvous; most ♀ uppersides brown with only a few bluish scales at base of hindwings; orange lunules small and pale.

The following aberrations taken in Kent are in R.C.K.:—♂ uppersides: *caerulea* Tutt; *pallidula* Tutt; *lavendula* B. & L.; *viridescens* Tutt; *grisea* Tutt; *irregularia* B. & L.; *marginata* Tutt; *seminigra* Preiss.; *torgniensis* Haverk.; *subfusca* Tutt; *albocrenata* Tutt; *cuneata* Tutt; *infrasessilis* B. & L.; *semicineta* Tutt; *albonigrofimbriata* Tutt; *minutissimus* Tutt; *minor* Tutt; *major* Tutt; also *coridon* + *bellargus* hybrid *polonus* Zell., "Cuxton May 20, 1893, J. W. Tutt" (vide *Ent. Rec.*, 4: 230; *Trans. ent. Soc. Lond.*, 1894: xv-xvi); and pathological examples. ♀ uppersides: *pertithonus* Tutt; *biirregularia* B. & L.; *pallidula* B. & L.; *unicolor* Tutt; *caeruleolunata* Tutt; *subalbolutunulata* Tutt; *albipuncta* Tutt; *albicineta* Tutt; *caeruleopuncta* Tutt; *postalbopuncta* B. & L.; *postcaerucincta* B. & L.; *sessilis* Tutt; *impar* Cockayne; *peraurantia* Tutt; *virgatus* B. & L.; *aurantia* Tutt; *postaurantiaextensa* B. & L.; *postauroidifferentiae* B. & L.; *radiussubaurantia* Tutt; *albodescens* B. & L.; *lutescens* B. & L.; *flavescens* Tutt; *antidiscoidulisnulla* B. & L.; *albonigrofimbriata* Tutt; *fulvofimbriata* B. & L.; *inaequalis* Tutt; *minor* Tutt. Undersides: *fuscens* Tutt; *griscens* Tutt; *grisea* B. & L.; (nom. *preoc.*); *fulvens* Tutt; *fulvescens* B. & L. (nom. *preoc.*); *castanea* Tutt; *nigrescens* B. & L.; *antialbescens* B. & L.; *alboparallela* B. & L.; *aurantia* Tutt; *lutescens* B. & L.; *flavescens* Tutt; *tripuncta* Courv.; *unipuncta* Courv.; *elongata* Tutt; *bilineata* Tutt; *lunacuspis* B. & L.; *exteratransversa* B. & L.; *quintaerratica* B. & L.; *glomerata* Tutt; *discreta* Tutt; *postparvipuncta* B. & L.; *parvipuncta* Courv.; *anticrassipuncta* B. & L.; *parisiensis* Gerh.; *i-nigrum-semi-i-nigrum* B. & L.; *limbojuncta* Courv.; *antitransiens* B. & L.; *antico-extensa* Tutt; *antico-juncta* Tutt; *trans. ad striata* Tutt, ♂, Dover, 1905; *antiobsoleta* B. & L.; *postobsoleta* B. & L.; *obsoleta* Tutt; *antico-obsoleta* Tutt; *postica-obsoleta* Tutt; *cinnus-obsoleta* Tutt; "obsoleta Tutt with marginal spots absent"; *irregularis* Tutt; *obsolescens* Tutt; *albonigrofimbriata* Tutt; *irregularia* B. & L.; *minor* Tutt; also one pathological example.

There is a notable tendency towards absence of underside spotting between Lydden and Temple Ewell, and in 1946-47 on only two visits there, I took several good ab. *obsoleta* Tutt (C.-H.). A. J. L. Bowes noticed this characteristic too, when he visited the locality, August 14, 1939, and wrote of the species there: "Very abundant, producing a lot of obsolescent forms . . . I brought away 8 or 9 without working for them".

Blue ♀♀, in which the amount of blue present is comparable to that in ab. *syngrapha* Kef., are apparently very rare in Kent. H. E. Hammond (*in litt.*) writes that the two daughters of Bruce Lightfoot, sometime stationmaster at Shoreham, took several *syngrapha* there c. 1904. Pickett (*Ent. Rec.*, 12: 272), records a "blue female" from Folkestone (probably that referred to by Tutt (*Br. Lep.*, 10: 33) as from Dover); and one stated to be *syngrapha*, and recorded by South (*Entomologist*, 35: 2), was taken at Dover by H. D. Stockwell.

Numerous other aberrations and abnormal specimens have been recorded (cf. *Entomologist*, 21: 133-134, 35: 2, 284, 292, 321, 42: 324.

74: 278, 77: 177; *Ent. Rec.*, 12: 272, 14: 275, 308, 38: 123, 54: 84; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1903: 75, 1914-15: 135, 1915-16: 116, 1933-34: 50, 52, 1944-45: 18, 20, 1946-47: 36, 1947-48: 33, 1950-51: 36, 1956: 37, 43; Barrett, *Br. Lep.*, 1: 86, pl. 12; Frohawk, *Vars. Br. Butts.*, pls. 29, 36; Tutt, *Br. Lep.*, 10: 4 *et seq.*

A. M. Morley (*in litt.*) gives the following notes on its variation in the Folkestone district (div. 8):—

"There is plenty of *Hippocrepis* in the Warren and I have seen *coridon* there many times, but never in large numbers, in fact seven is the most seen at one visit. The headquarters of the species is, or was, on various places on the Dover Hill, Folkestone. Westward from there the species occurs all along the Downs as far as Newington Quarry, usually in small numbers. Beyond Newington Quarry, I have explored the Downs but failed to find any *Hippocrepis*. Evidently *coridon* occurs further north, for I found three near Lyminge, September 15, 1931, and have been told there is a good colony in the Elham Valley.

"For the sake of simplicity, it may be assumed that all varieties I mention come from a small area of the E. Downs, on the Dover Hill, Folkestone, unless otherwise stated. L. W. Newman found many larvae of *coridon* there one year, I think in 1932. He told E. C. Joy the place, who later told W. Rait-Smith and myself. The insect was far more numerous at this locality than on any other part of the Downs; and on August 4, 1933, I counted 450. I visited the place now and again before the war but recorded no high scores. However, in 1942, I counted 716 on August 22; in 1943, 703 on August 11; in 1944, 914 on August 5; in 1945, 583 on July 29; in 1946, 668 on August 5; in 1947, 300 on August 3; in 1948, 150 on August 26; in 1949, 300 on August 5; in 1950, 182 on August 28. From 1942 to 1947 was probably its peak, during which period the numbers were comparable with those of famous hunting grounds in the west, if one allows for the smallness of the area here (about 10 acres), and the rate of variation was remarkably high. In 1948, a fire on the Downs destroyed the main breeding ground in this area, and as it occurred in August, must have greatly reduced the number of eggs; in addition, the coarse grass had its effect on the *Hippocrepis*, but I expect that a further factor helped, as often happens, to reduce the numbers of a species drastically after a period of overpopulation. Anyhow, K. Self tells me that the glory has departed and that the striking varieties have died since 1955.

"With regard to size, I have several of both sexes with a wing expanse of 40 mm., ab. *major* Tutt; the smallest I have is a ♀ 28 mm., ab. *minor* Tutt. Of the more interesting aberrations may be mentioned the following: ♂ uppersides. I have two *viridescens* Tutt, 1945, 1947, they are quite bright green, the undersides yellowish; K. Self took (in 1957) a melanic green specimen, *ultraviridescens* B. & L. On July 26-27, 1933, I took two greyish males, *grisea* Tutt, since when I have never seen another. The great prize of this part of the Downs is of course what has been called the 'black' *coridon*. This is a true melanic with a basis of blue; the peculiarity of this variety is that the underside is also melanic, and for this reason the Folkestone examples may be peculiar, for it does not occur elsewhere to my knowledge. Apparently the first specimens were taken by L. W. Newman in 1932; in 1933, E. C. Joy took two or more, but neither Rait-Smith nor I could find any,

despite many visits, until August 16, 1941, when I took one. In 1942, I took two, July 30, August 24; in 1943, one, August 9; in 1944, two in ten minutes, August 5; in 1945, one, July 24; in 1946, three, August 1, 9, 13; in 1947, one, July 30. Since 1950, K. Self has taken six or seven, but thinks that the group came to an end in 1955. This must have been a sort of family, since practically all were taken within a very small area. Beside those varieties already mentioned, there was on the Dover Hill, a wide range of the usual aberrations of which the commonest were *pallidula* Tutt and *albocrenata* Tutt; of the former, the palest I have taken was in 1947 and is tinged with pink; *ultra-albocrenata* B. & L. is much rarer than *albocrenata*, but is generally rather worn; the best I have was taken in 1943. Others are: *suavis* Schultz, Langdon Bay, 1928; *ultra-albesco* B. & L., two, 1943; *post-cuneata* B. & L., 1941.

“♀ upperside abs.: A certain amount of blue is not uncommon, but *syngrapha* Kef. has, I understand, never occurred at Folkestone; the nearest approach is *infrasesmisyngrapha* B. & L., of which I have three taken 1933, 1942, 1943. Other colour abs. are rare: *grisescens* Tutt, one, 1947; *brunnescens* Tutt, one, 1946; *atrescens* Tutt, two, 1946, 1947. Of *partim-transformis* B. & L., probably a degenerate form, I have seen only two, one, Dover Hill, 1942, one Bluebell Hill (div. 7), 1941. In the hindwing markings there is a good deal of variation, but *partim-furvescens* B. & L., with some hindwing lunules brown instead of orange is rather unusual; I have two, 1933, 1943. K. Self says those with yellow lunules were common in 1948, but otherwise rare. Two other variations need only be mentioned: (1) An intersex *inequalis* Tutt, 1944; and at least three other *inequalis* have been taken by K. Self; (2) *fulvafimbriata* B. & L., which is, or was, not rare on the Dover Hill, I have kept five, of which the first was taken 1938.

“Underside abs.: Many ♂♂ are very pale underneath, some nearly white as in *albescens* Tutt, which is rare, and I have three only, all taken 1943. Of ♀ undersides, the most interesting are: *castanea* Tutt, of which I took two, 1933; *pulla* B. & L., one only, Bluebell Hill (div. 7), 1941; *nubila* B. & L., and *ultra-nubila* B. & L. (both of which are quite rare in ♂♂, but relatively common in ♀♀) the ♂♂ of each of which were about five times as numerous as the ‘black’ *coridon*. Of variation in colour at base, one need only mention *fumidescens* B. & L., of which I took a ♀ in 1942. Regarding number of fw. basal spots I have only one *impuncta* Courv., ♂, 1943; one *quinquepuncta* Courv., ♀, 1933. There seems to be no record of *parvipuncta* Rebel, but I have a ♀ *crassipuncta* Courv., 1942. Both *i-nigrum* Tutt and *arcuata* Courv. are too common to be worth mentioning, while various arrangements, prolongations or junctions of the spots are not conspicuous enough to be listed. E. C. Joy used to say that *striata* Tutt had never been taken at Folkestone, but in 1923, L. W. Newman took a ♂ *antistriata* B. & L. here (lot 94 in Crabtree coll. sale). K. Self took a very good ♂ *radiata* Courv. in 1952 and missed another the same year, and I have a good ♂ *crassichevro* B. & L. taken 1942. A. E. Stafford (*in litt.*) writes that he took a ♂ on the Downs, 1952, in which the right side is “heavily radiated, striated and splashed with broad black (intense) scaling, in both wings”, the left side normal. The usual variety of any consequence west of the Dover Hill is *obsoleta* Tutt, of which two or three have been taken annually to my knowledge since I came here in 1927. As to the

area on Dover Hill specially mentioned above, the various forms of *obsoleta* have been so common there that they are not worth listing, except that more than once I have taken five at one visit; *caeca* Courv., of course, is a different matter, I have a good many *anticaeca* B. & L. and *postcaeca* B. & L., but complete *caeca* is rare enough to be listed: ♀, 1941, ♀, 1943, ♀, 1944, two ♂♂, 1945. The only other interesting undersides I have are a ♀ *antifowleri* B. & L., 1943, and a ♂ nearly white + *antifowleri*, 1942".

FIRST RECORD, 1798: "Found on the chalk-hills between Dartford and Rochester, particularly on a long range of hillocks leading from Dartford to the wood at Darent" (Donovan, *Nat. Hist. Br. Ins.*, 7: 53).

¹Unlike *L. bellargus*, *coridon* appears to possess some degree of wanderlust; thus, ♂ *coridon* (and only ♂♂, so far as I am aware) have occasionally been seen in Kent, usually singly, far from known colonies, and as often as not on non-calcareous formations. Since *coridon* also appears to show migratory tendencies on the continent (C.-H., *Lambillionea*, 54: 8), it might be advisable to examine such specimens in future for purposes of comparison, in case they show differences from our native examples.

L. bellargus Rott. (*thetis* Rott.): Adonis Blue.

Native. Chalk downs and rough grassy places on chalk; on *Hippocrepis comosa*. Often in same places as *L. coridon*, but more local, less plentiful, and fewer colonies.

The first brood appears in late May and early June, and finishes in late June or exceptionally, in July. The second brood begins in August, rarely in the first week, and runs throughout September, being at its best as a rule in the first week of that month; occasionally it runs into October. In 1893, J. W. Tutt noted it at Cuxton as well out on May 6 (Tutt, *Br. Lep.*, 9: 380); and in 1904, at Folkestone, A. H. Clark observed it as late as October 15 (*op. cit.*, 9: 382). In the cold wet year of 1888, no second brood was seen at all in its usual haunts in Kent (*op. cit.*, 9: 378; Tyrer, *Entomologist*, 22: 46).

With regard to periodic fluctuation, Newman (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1916-17: 77) remarked that in 1916, the butterfly was in thousands in North Kent, and that about 1890 it was equally abundant in the same area, but in the intervening period was very uncertain in appearance and practically disappeared. The same observer (*op. cit.*, 1920-21: 75) also reported that at Folkestone in 1920 it was scarcer there than he had ever known it.

The imago has been observed ovipositing on Horse-shoe Vetch (*H. comosa*), at Cuxton in 1893; and of seven larvae found at Folkestone in 1906, two had worker ants of *Lasius niger* on their backs (Tutt, *Br. Lep.*, 9: 358, 362). E. Scott tells me he has found the larva on *H. comosa* at Westwell (C.-H.); and A. M. Morley (*in litt.*) writes that at Folkestone, he looked for larvae on many occasions but could find none, though ova were easy enough to find; finally, on May 6 1934 at 6.30 p.m., in full sun, he saw many larvae suddenly appearing, and counted 24 close to where he was standing, about half of which had each a small yellow ant (*Lasius flava*) on its back.

5. Biggin Hill (D. F. Owen, *in litt.*, 1948).

6. Near Dartford (see *First Record*). Near Darent (Stephens, *Haust.*, 1: 90). Near Kemsing (Carrington, *Entomologist*, 13: 78).

Cuxton, various dates, 1887-1909 (Tutt, *Br. Lep.*, 9: 380-382). Shoreham, 1896, 1901-02 (Tutt, *Br. Lep.*, 9: 381-382). Wrotham Hill, common, pre. 1900 (H. S. Fremlin). Eynsford (H. C. Huggins); 1928 (*Lond. Nat.*, 1928: 73). Near Ryarsh, plentiful, 1924 (J. Fremlin). Birling, various years, 1910-25 (F. T. Grant); 1950 (H. C. Huggins). Magpie Bottom, one September 9, 1934 (A. R. Kidner). Brasted [Otford] (Prideaux, *Entomologist*, 67: 191). Shoreham (G. V. Bull) (S. F. P. Blyth). Between Eynsford and Kemsing, sparingly at several spots (H. E. Hammond). Otford, May 23, 1943 (J. S. Wachter MS.); plentiful, June 2, 1951; one ♀ only, June 13, 1961, an early year (C.-H.). Shoreham; Magpie Bottom; Eynsford; not uncommon, 1948 (J. F. Burton). Otford; Romney Street (D. F. Owen). Cuxton (Woodcock, *Rochester Nat.*, 1948: 6 (133) 4).

6a. Chattenden (Woodcock, *Rochester Nat.*, 1948: 6 (133) 4).

7. Westwell Downs, 1857 (Russell, *Ent. week. Int.*, 2: 67); Westwell, rare, has decreased due to ploughing (Scott (1950)). Burham; Darland Hill (Chaney 1884-87)). Queendown Warren, 1886-87 (Russell, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 4); 1890 (Tyrer, *Ent. Rec.*, 1: 207); 1950-51 (A. M. Swain). Burham Down; Darland Banks; Walderslade (Woodcock, *Rochester Nat.*, 1948: 6 (133) 4). Maidstone* (Golding, *Entomologist*, 36: 72). Huntingfield neighbourhood, near Faversham (Chitty, *Ent. mon. Mag.*, 36: 238). Bluebell Hill (Walker, *Ent. Rec.*, 10: 101); common, June 23, 1957 (E. Philp). Lenham, 1901 (Goodwin MS.). Nashenden Lane, Borstal, one, 1949 (L. R. Tesch). Burham Down, a small isolated colony was investigated in 1956, and the first brood numbers estimated at 2,700 ♂♂ and 700 ♀♀; only about one-fortieth of these numbers were flying in September (Davis, Frazer, and Tynan, *Proc. R. ent. Soc. Lond* (A), 33: 31-36).

8. Combe Wood, Dover (Stephens, *Haust.*, 1: 90). Dover (Bree, *Mag. Nat. Hist.*, 5: 335); July 18, 1833 (Stephens, *Ent. Mag.*, 1: 527). Near Folkestone, 1858 (Drury, *Ent. week. Int.*, 4: 102). Near Shorncliffe, 1859 (Rogers, *Ent. week. Int.*, 6: 180). Folkestone, abundant on the downs to the east (Knaggs, *Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 82). Cockerling Wood, fifteen mid. June 1896 (S. Wachter MS.). Between Dover and St. Margarets, June 27, 1908 (P. A. Cardew, *Diary*). Chilham (V.C.H. (1908)). Chilham Downs, odd ones, c. 1926 (J. Shepherd). Wye Crown, 1924 (Gomm, *Diary*) (Scott, 1950). Stowting (C. A. W. Duffield). Crundale, 1929, 1932-33; Ewell Minnis, 1931-32; Wye, 1934; Temple Ewell, 1937 (A. M. Morley). Sole Street, twenty-two, September, 1941, several, 1942 (J. S. Wachter MS.). Bridge, a few only, c. 1946 (R. Gorer). Deal; Poulton Valley (E. & Y. (1949)). Caesar's Camp, Folkestone, many, September 4, 1949; Folkestone Warren, June 3, 1956 (R. F. Bretherton).

At Folkestone, from 1927-57, it occurred in small numbers in the Warren, but in rather large numbers on the Dover Hill and the Downs as far as the Canterbury road, and at times in vast numbers on the slopes above Holywell and on the Middle Hill; in lesser numbers on Castle Hill; and in still smaller numbers along the Downs as far as Newington Quarry. With regard to numerical fluctuation at Folkestone, it was plentiful from 1926 to June 1930, then declined in the second brood and was rather scarce in 1931, but abundant in 1932; very abundant in 1933, the best for eleven years; 1934 was disappointing and many collectors left in disgust; 1935-37, fairly numerous; 1938-39,

numbers low; 1940-41, very few; 1942-43, numbers high; 1944, numbers low, and lower still in 1945; 1946, very few, and fewer still in 1947; numbers up again in 1948-49; 1950, saw very few, but only the Warren and Dover Hill were visited; 1951, many seen on the Downs; 1952, fairly numerous; 1953-60, apparently not plentiful, and latterly it has become really scarce. "The largest number that I recorded as examined in any half day was 950 in 1929; but L. W. Newman told me that working all day he examined as many as 2,000 in the good period" (A. M. Morley, *in litt.*).

16. Folkestone Golf Course, two seen by P. L. Scott, September 6, 1955 (A. M. Morley).

VARIATION.—Of this very variable species, Kent is undoubtedly the county *par excellence* for the number of aberrations and rare forms that have occurred, some of which are known from nowhere else.

Verity (*Ent. Rec.*, 31: 30) described ssp. *britannorum* from a series taken by Conquest at Cuxton (div. 6), in August 1905 and June 1906. It is diagnosed as differing from nymotypical *bellargus* as follows:—♀, richer blue, with smaller and less vivid marginal lunules; ♂, underside darker and less frequently tinged fulvous; black ocelli smaller and set in a more regular median series.

The following notes on its variation in the Folkestone district have been communicated by A. M. Morley, who has probably had more experience with this species than anyone else living:—“(a) ♂ uppersides: The colour varies much more than is commonly supposed. The palest and one of the rarest forms is the silvery ab. *argentea* Tutt, of which I took one on the Dover Hill, September 2, 1928, and K. Self has one taken 1958. Ab. *viridescens* Tutt is not so common as with *coridon*; and of *purpurescens* Tutt, which is rare, I have four, August 8 1933, July 29 1935, August 26 1948, September 8 1947, and K. Self took one August 1957. Ab. *plumbeus* Courv. is regarded as a rarity, and I have only taken two, Middle Hill, June 2, 1932; L. W. Newman, however, took over twenty *plumbeus* one year, I think in 1923 or possibly 1926, when the collecting season was exceptionally wet; one in Crabtree coll. sale, lot 172, “a dove grey male, Folkestone, 1887”, may refer to this form. The great prize is of course ab. *suffusa* Tutt, the so-called “black *bellargus*”, of which old Bailey told me he took two in one day on the Dover Hill. I have one approaching *suffusa*, taken on the Canterbury Hill, June 31, 1934. The ab. with spots round the outside of hw. is not rare; finally, one occasionally finds specimens with pale patches, usually on one wing only, rarely on all of them, I have one of the latter taken August 13, 1943, and K. Self has four better than mine, taken 1958. (b) ♀ uppersides. The main variation is the presence of blue in varying amounts ranging from ab. *venilia* Bergstr. to ab. *semiceronus* Tutt. The prettiest of these is ab. *caerulescens-marginata* Tutt, very blue with large red lunula on all four wings, of which I took one, Downs, June 7, 1933, and D. Smith, another, September 8, 1948. I do not think that true ab. *ceronus* Esp. has ever been taken here. It used to be thought that blue ♀♀ only appeared in wet weather, but I have found plenty in very dry weather. Of other colour forms, ab. *brunnescens* Tutt, is not rare, but of pure ab. *atrescens* Tutt, I have no specimen, though most of the blue ♀♀ have this very dark basal colour. An odd specimen equivalent to ab. *biirregularia* B. & L. of *coridon*, bred June 24, 1934, from a larva, has left side dark brown and right side ab.

venilia. I have only one ab. *fuscescens* Tutt, Downs, September 3, 1933. Ab. *marginata* Tutt, occurs only in hot periods and in quite large numbers in suitable years. There are a fair number of minor abs. with various lunules, wedges, etc., but the only one worth mentioning is that equivalent to *apicata* Tutt in *P. icarus*, which is far less numerous than with *icarus* and far less striking when it does occur. (c) Underside abs.—*grisea* Courv., rare, ♂, September 4, 1934; equivalent of *ultraalbesco* B. & L. in *coridon*, rare, ♂ ♀, August 24-25, 1933; equivalent of *pulla* B. & L. in *coridon*, very rare, ♂, August 19, 1942 (this specimen is also *parvipuncta* Courv.); equivalent of *fumidescens* B. & L. in *coridon*, rare, ♂, August 14, 1933; *flavescens* Tutt, rare, ♂, June 12, 1932; *discoidalis-nulla* Tutt, E. C. Joy said this was very rare, so I looked for it assiduously and got ♂, August 17, 1933, ♂, September 1, 1943, 4 ♀ ♀, August 30, 1932, ♀, September 4, 1938; *impuncta* Courv., *quadripunctata* Courv., *parvipuncta* Courv., *crassipuncta* Courv. and *arcuata* Courv. are not rare, but I do not have the equivalent of *i-nigrum* Tutt of *coridon*; *costajuncta* Courv., very rare, ♀, August 17, 1933 (this specimen is also *irregularis* Tutt); *confluens* Aigner-Abafi, very rare, ♀, September 21, 1929. There is a ♂ ab., apparently unnamed, with ash-coloured lunules under the hw.; Joy said that it was associated with very pale uppersides; he had a few like this, and I believe three were taken here in 1932; the only one I have is the *argentea* described above.

“The most distinctive feature of the Folkestone *bellargus* in its palmy days was the abundance of specimens with small extra spots, pear shaped spots, spots extended into lines, and lines joining the discoidal. The only forms of these in my coll. worth mentioning are those with two or more spots extended into lines (i.e. similar to *parallela* Courv. of *coridon*) of which I have 2 ♀ ♀, 1929 and 2 ♂ ♂, 1932, 1935, and some heavily marked undersides, equivalent to the following B. & L. named abs. of *coridon*: *postdiscoelongata*, ♂, 1932; *postradiata*, ♂, 1929 (this also has characters similar to *fowleri* South of *coridon*); *antistriata*, ♂, 1929; *antidigitata*, ♂, 1933, 2 ♀ ♀, 1942 (the true *digitata* Courv. of which I have no example, is much rarer than is commonly supposed, the name having been frequently mis-used); *obsoleta* Tutt on all four wings is rather rare; but if confined to fw. or hw. is rather common. The equivalent of *anticaeca* B. & L. of *coridon* is rare, and I have only one, a ♀, August 25, 1933; on the other hand I have four equivalent to *postcaeca* B. & L. of *corydon*. As to complete *caeca* Courv. on all four wings, this seems to be a real rarity; thus, on August 27, 1933, I reached the Middle Hill about mid-day and Joy told me with some pride, he had taken two *caeca*; soon afterwards I found a good ♂, and later an equally good ♀; I doubt whether four *caeca* were taken on the same day on any other occasion. In Crabtree coll. sale, lot 175, was a good ♂ *caeca*, Folkestone, 1922; and in B. W. Adkin coll. sale, another ♂ *caeca*, Folkestone, 1924. Both *striata* Tutt and *radiata* Ob. are very rare indeed; one, which L. W. Newman said he found well on in October, between Middle Hill and Castle Hill, appears to be lot 177 of Crabtree coll. sale: ‘a large male *radiata*, Folkestone, 1927, L. W. Newman.’ (d) Miscellaneous abs.—A rare form is the equivalent of *fowleri* South of *coridon*, which in addition to the *postradiata* ♂ above, a ♂ and ♀ were taken August 28, 1932, and a ♀ August 28, 1931. A

♀ specimen taken August 17, 1933, has brownish cilia, a form which is not rare in *coridon*, but seems to be very rare in *bellargus*. I could mention also a ♀ upperside with irregular blue streaks, June 6, 1949; and a ♀ equivalent to *virgatus* Tutt of *Plebejus argus* L., with lunules on hw. connected, taken September 16, 1944. With regard to size, I have several *major* Tutt, i.e. about 36 mm.; *minor* Tutt is not uncommon in a dry season, my smallest, a ♀, is 20 mm. Finally a proof that some if not all varieties are hereditary: in August 1928, W. Rait-Smith caught a ♀ *bellargus* which he called *striata*; it escaped from his net and he sought for it for a week at the east side of the Middle Hill, and at last someone else took it when it was too worn to keep; the following June, Joy and I found 22 abs. on exactly the same spot in one morning, all having small striations."

The following aberrations taken in Kent are in R.C.K.:—♂ uppersides *purpurascens* Tutt; *argentea* Tutt, Folkestone, 1933; *excelsia* Tutt; *czekeli* Aign.; *particola* Tutt; *nigra* Cockerell (= *suffusa* Tutt), Folkestone, seven, 1916, L. W. Newman, one, 1916, S. G. Hills (S. G. Hills); *puncta* Tutt; *hyacinthus* Lewin; *minor* Tutt; *pallida* Aust., "originally thought to be hybrid between *icarus* and *bellargus*", two, Queendown Warren, June, 1887, H. W. Sabine, one, September 4, 1887, one, June, 1887, one, June 15, 1886, one, June, 1886. Also several abs. with "mixture of grey and blue"; and several "blue dusted with grey". ♀ uppersides: *marginata* Tutt; *venilia-lunulata* Tutt; *cuneo-luneolata* Tutt; *salacia* Bergst.; *cuneo-marginata* Tutt; *caerulescens* Tutt (*nom. preoc.* Oberth.); *caerulescens-marginata* Tutt; *caerulescens-lunulata* Tutt; *semiceronus* Tutt; *urania* Gerh.; *irregularis* Tutt; *metallica* Tutt; *radiata* Gasch.; *caeruleopuncta* Tutt; *flavescens* Tutt; *caeruleocincta* Tutt; *albocincta* Tutt; *rufescens* Tutt; *aurescens* Tutt; *minor* Tutt; *pallida* Aust., one, Queendown Warren, June, 1887, E. Sabine, one, September 1887, one, September 7, 1887; one, similar to *inaequalis* Tutt of *coridon*. Also, (1) two intersexes, one, Charing, 1923, one, Folkestone; (2) mixed gynandromorph, Folkestone, 1936; (3) several pathological examples. Underside abs.: *pallescent* Tutt; *fuscescent* Tutt; *atrescent* Tutt; *pallida*, one, June 17, 1886; *punctistriata* Tutt; *tiphys* Esp.; *basijuncta* Tutt; *discoelongata* Courv.; *addenda* Tutt; *semidigitata* Courv.; *postico-striata* Tutt; *subtus-partim-radiata* Oberth.; *parallela* Courv.; *discojuncta* Courv.; *conjuncta* Tutt; *conjuncta* Tutt, with "white ground colour," Folkestone, 1920; *conjuncta* Tutt, with "asymmetric extra striation", N. Kent, 1918; *antico-conjuncta* Tutt, fw., *conjuncta* Tutt, hw., Folkestone, 1916; *antico-obsoleta* Tutt, fw., *conjuncta* Tutt, hw., with "marginal spots and chevrons absent", Folkestone, 1920; *striata* Tutt, one, Ashford, August 1927, one, Folkestone, October 1922; *striata* Tutt, fw. only, Folkestone, August 1933; *crassipuncta* Courv.; *parvipuncta* Tutt; *obsoleta* Tutt; *antico-obsoleta* Tutt; *obsoleta* Tutt, "with no marginal spots"; *cinnus* Stgr., two; *trans. ad cinnus* Stgr., many; *subtus-impunctata* Oberth.; *krodeli* Gillm.; *detersa* Vty.; *trans. ad albo-ocellata* Tutt; *irregularis* Tutt; one, ab. nov. "orange chevrons extreme obsoleta". Also (1) one pathological example; (2) an example of homeosis, "blue on underside of forewing" (*Entomologist*, 55: 257).

Among various abs. from Kent in Br. Mus. (S. Kensington), are several referable to *pallida* Aust. and *nigra* Cockerell (C.-H.).

Many other aberrations and abnormal specimens have been recorded (cf. *Entomologist*, **17**: 271, **21**: 132-134, **25**: 16, **26**: 22, **33**: 280, **55**: 114, **63**: 38, **66**: 283, **70**: 68; **85**: 68; *Ent. Rec.*, **2**: 111, 273, **4**: 230, **14**: 113, **22**: 112-115, 195, 305, **29**: 20, **36**: 6-8, **37**: 169, **44**: 60, **54**: 144, **60**: 55, **67**: 84; *Proc. S. Lond. ent. nat. Hist. Soc.*, 1886: 61, 1889: 165, 1892: 23, 1894: 77, 1916-17: 98, 1918-19: 100, 1930-31: 75, 1932-33: 112, 1933-34: 50, 1934-35: 50, 1935-36: 38, 1938-39: 28, 1942-43: (2) 32, 1946-47: 3-4, 38, 1947-48: 33, 1951-52: 45, 1956: 43; Barrett, *Br. Lep.*, **1**: 82-83; Tutt, *Br. Lep.*, **10**: 329 *et seq.*; Frohawk, *Nat. Hist. Br. Butts.*, **2**: 116, plt. 51; *idem*, *Vars. Br. Butts.*, plt. 31; Dale, *Hist. Br. Butts.*, 67).

FIRST RECORD, 1794: Taken in numbers near Dartford, by Joseph Grimaldi, June 1794 (1838, *Memoirs of Joseph Grimaldi*, **1**: 37).

Cyaniris semiargus Rott. (*acis* Schiff.): Mazarine Blue.

Immigrant? Chalky places, rough pastures. Very rare, and not certainly observed since 1876, though possibly overlooked.

At least seven examples are recorded as having been noted in Kent, the last about 1912; in most cases however, its alleged occurrence is suspect.

The earliest reference to the species in Kent is that of Wood (*Index Entomologicus*, 8, fig. 63), who figures a ♂ specimen, and gives: "Chalk soils, Kent, May to July".

A much more detailed record is that of F. H. Haines (*Ent. mon. Mag.*, **50**: 250), who stated that he had by him for many years a ♂ *semiargus* which he took "at the end of July, 1876, while catching *L. icarus* on some rough pastures in south-west Kent, situated in the triangle formed by Edenbridge, Cowden and Dorman's Land" (div. 13); and added that the "place of capture was situated on the Wealden Clay, far south of the Chalk range, from which it might have straggled".

[♂, labelled: "ex coll. Webb. Bayley, Dover, 1840". "B. W. Adkin's sale, 15.ix.48", was purchased at F. M. Richards' coll. sale, 1951, by R. F. Bretherton (Bretherton, *Ent. Gaz.*, **2**: 221, and *in litt.*). ♀, in Hitchen Mus., labelled: "Folkestone, 1860" (Foster, *Entomologist*, **75**: 246). Taken near Cuxton, c. 1873 (Farrow, *teste* Tutt, *Br. Butts.*, 166); but this record was subsequently treated as doubtful by Tutt (in *Br. Lep.*, **10**: 315). ♀, in J. A. Clark coll. sale, said to have been taken at Deal in 1879 (Adkin, *Entomologist*, **42**: 319). "Dover, 2.x.1879 (Leplastrier: Dale Reg.)" (Bretherton, *Ent. Gaz.*, **2**: 221). On July 23, 1914, E. E. Green wrote that he had recently examined a specimen taken by a Mrs. G. H. Green, who assured him that she took it "on the chalk-hills . . . at a point a few miles east of Maidstone"; the specimen, a ♀ in poor condition, was "believed to have taken within the past three years" (cf. Green, *Ent. mon. Mag.*, **50**: 222).]

FIRST RECORD, 1833: Wood, *Index Entomologicus*, 8.

Celastrina argiolus L.: Holly Blue.

Native. Shrubby places, gardens, hedgerows, wood borders, parks, etc.; on Holly, Ivy, *Cornus sanguinea*, [*Frangula alnus*, *Euonymus europaeus*]. Found in all divisions.

The butterfly normally appears from the end of April or beginning of May, with a partial second emergence in July-August sometimes

lasting into September. Tutt (*Ent. Rec.*, **8**: 65) writing in 1896, stated that in his experience the second brood was "always very rare in Kent". The records show, however, that during the 20th Century, second generation specimens have been observed in Kent in many years, and in exceptional seasons have even appeared more plentiful than in the first generation. Very occasionally there appears to be a partial third generation; thus, in 1921, Jones (*Entomologist*, **54**: 291) noted it at Eltham on October 16; in 1912, Butterfield (*Ent. Rec.*, **28**: 278) saw several ♂♂ and ♀♀ at Plumstead at the end of September; and in 1899, a fresh ♀ was taken at Greenhithe on October 29 (Farn, *Entomologist*, **43**: 354). In 1910, a ♂ was taken in Isle of Sheppy on March 6 (Pellatt, *teste* Walker, *Ent. mon. Mag.*, **46**: 92); and in 1898, one was noted at Dover on February 15 (Webb, in Tutt, *Br. Lep.*, **9**: 464), and recorded, probably erroneously (in *Entomologist*, **31**: 120) as *P. icarus*.

The butterfly is usually seen in small numbers only; and in certain years is apparently quite scarce, e.g. in 1930-33, and more especially in 1931. On the other hand, it is sometimes plentiful; and occasionally abundant, as for instance in 1870, 1899-1901, 1928, 1934, 1946. Sabine (*Entomologist*, **67**: 223) states that at Erith in 1900, he captured some fifty specimens in about an hour; and D. F. Owen notes that in 1946, it was "by far the commonest blue" in the Lewisham area (div. 1), and one of the commonest butterflies at Greenwich Park.

Changes in numerical frequency in this species may be quite sudden, as was the case for instance in N. Kent in 1934, when butterflies of the spring brood were observed in hundreds, larvae were very abundant in June, and second brood butterflies were plentiful everywhere (Newman, *Entomologist*, **67**: 223); though in the same area during the previous four or five years it was "almost extinct" (Newman, *loc. cit.*). There are indications, however, that such changes in numerical strength may be fairly local; thus, though it was recorded as having been so scarce in N. Kent in 1932, curiously enough at West Wickham (in N. W. Kent) that year, it was observed in abundance (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1932-33: 84).

Ova were found by me on Holly buds at Sarre, May 17, 1939, and it is probable that these and the flowers of this shrub form the normal food of first brood larvae (C.-H.); Jones (*Entomologist*, **44**: 301), however, states that at Eltham, in June 1911, an abnormally hot summer, he found larvae feeding on young Holly leaves. The larvae have also been repeatedly noted on Cornel (*C. sanguinea*); e.g., at Broad Oak, I found a larva feeding on the flowers, June 22, 1944 (C.-H.); Adkin (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1913-14: 117), exhibited a series, bred from larvae collected from the berries at Eynsford; and S. Morris (*Diary*) writes that at Broad Oak, from a single bush facing due west, June 1940, he found six larvae all on the lower branches away from direct sunlight, and none on the upper branches. There are a number of records of larvae on Ivy, e.g. A. M. Morley found five eating Ivy buds at Brook, September 13, 1934; and S. Morris (*Diary*) notes a late larva on this at Westbere, October 2, 1939. At Cuxton, in 1909, Tutt (*Ent. Rec.*, **21**: 138) noted the butterfly apparently busily ovipositing on Alder buckthorn (*F. alnus*), and another on Spindle-tree (*E. europaeus*), but the resting places were out of reach and impossible of examination.

At Biggin Hill, June 1, 1960, I watched an imago for sometime, flying about high up and settling on Buckthorn (*Rhamnus catharticus*), which was in flower, but whether it was ovipositing or imbibing I had no means of knowing; and S. Wakely tells me that he saw several flying around this at Eynsford in 1934 (C.-H.).

VARIATION.—In the F. A. Small coll., is an underside ab. with elongated spots, labelled "Near Canterbury, May 1924, F.A.S." (C.-H.).

Frohawk (*Vars. Br. Butts.*, plt. 27, fig. 2) figures a small whitish ♂, bred Bickley, 8.3.1926; and Woodforde (*Entomologist*, 53: 201) records a ♀ ab. *lilacina* Tutt from Meldola coll., "but the usual black borders are light brown", taken Deal, August 1901.

Sabine (*Entomologist*, 33: 303) records "a pale lavender-coloured male, three or four males exceptionally dark, another male having some of the colouring pigment absent on right forewing, and a female (first brood) unusually suffused with black on all the four wings"; all captured at Erith, in 1900.

Hills (in Tutt, *Br. Lep.*, 9: 393), notes a ♀ taken, Folkestone, spring, 1897, "in which the ordinary violet-blue was replaced by a bright metallic blue"; and Weir (*Entomologist*, 17: 196) records having taken a summer specimen at Brenchley, very similar to the American ssp. *pseudargiolus* Bdv., figured in Edwards, *Butts. N. America*.

One taken near Petham (div. 8), May 3, 1940, has the "dark markings on fore and hindwings reduced, on the latter to little more than a dot"; a ♀ taken Petham, August 7, 1937, "has very broad dark borders to all wings while the centres are suffused with grey" (A. M. Morley).

Gardiner (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 10) records a "halved gynandromorph", Dover, July 27, 1943; Wheeler (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1948-49: 50), exhibited a gynandromorph bred, Tonbridge district, August 9, 1944; and the late L. T. Ford told me that a halved gynandromorph of this species was taken at Bexley by H. W. Andrews (C.-H.).

The following abs. are in R.C.K.:—Uppersides: *argiolus-lata* Tutt, 2 ♀♀, Beckenham, April-May 1924; *pallida* Tutt, ♀, bred Halling, 12.7.1912; *aquilina* Grund., ♀, N. Kent, July 1934; *lilacina-suffusa* Tutt., ♀, Eynsford, 16.7.1912, ♀, bred Halling, 12.7.1912; *clara* Tutt, ♂, Folkestone, April 1926; *antidisconulla* Lempke, 2 ♀♀, Beckenham, 27.4.1924, 1.5.1924, one ♀, Cuxton, bred April 1911 ex larva, September 1910; "ab. nov.—leaden ground", ♀, Folkestone, 1870; ♀, "gen. vern. completely dusky", Erith, May 1900. Also, a mixed gynandromorph (mostly ♀), Beckenham, 15.4.1924. Undersides: *paucipuncta* Courv., Beckenham, 7.4.1924; *c-nigrum* Tutt, Beckenham, 23.4.1924; one, "ab. nov.—leaden ground, normal upperside", N. Kent, April, 1923; ab. with "black irregular streaks", Sidcup, 1907; ab. with "top spot elongated", N. Kent, 1923.

FIRST RECORD, 1822: May 19, 1822, "walked with Mr. Jones to Thong and Shorn Ifield and caught the argiolus" (Arnold, *Robert Pockock*, 133).

Cupido minimus Fuessly: Small Blue.

Native. Chalk downs, rough grassy fields and hollows on chalk, also rarely in sandy places (in div. 4); on *Anthyllis vulneraria*. Very local, and usually occurring in small colonies, where it persists year after

year. The second generation is partial, and only appears some years.

1. Birch Wood (Stephens, *Haust.*, 1: 86). Eltham district* (Jones, *Entomologist*, 44: 301).

4. Between Kingsdown and Walmer, on the sea side of the road, nine, June 13, 1928 (A. M. Morley). Ebbsfleet, noted up to 1952; Richborough, 1954 (D. F. Harle, *in litt.*, 1960).

5. Green Street Green; Farnborough (Alderson, in Tutt, *Wool. Surv.* (1909)). Westerham, small colony, c. 1945 (R. C. Edwards).

6. Longfield (Jennings, *Entomologist*, 4 (54) ii). Near Sevenoaks* and Seal Chart*; Farningham district; Halling, in hundreds, June 5-15, 1873; Cuxton, 1880, 1895-96; Shoreham, 1886, 1899, 1900-02; Eynsford, 1900 (Tutt, *Br. Lep.*, 10: 130 *et seq.*). Luddesdown (Andrews, in Chaney (1884-87)). Holly Hill (Chaney (1884-87)). Birling Downs, June 6, 1911 (F. T. Grant). Otford, June 9, 1913, June 9, 1914, June 7, 1919 (Gillett, *Diary*) (Prideaux, *Entomologist*, 46: 327); 1942 (J. S. Wachter MS.); c. 1943, "wherever clumps of *Anthyllis* escaped the attentions of tethered cattle or horses, *L. minima* was sure to be found" (R. M. Prideaux, *in litt.*, 1951). Shoreham, 1932 (F. D. Greenwood); in one small field, 1947; "in hundreds", 1948 (D. F. Owen); June 21, 1957 (A. A. Allen). Fawkham (E. J. Hare); one, May 15, 1948 (G. G. E. Scudder).

6a. Darenth Wood (Stephens, *Haust.*, 1: 86).

7. Darland Hill; Wigmore Wood; Great Cowbeck Wood (Chaney (1884-87)). Chatham (Tyrer, *Entomologist*, 22: 47). Ashford*, 1897; Westwell, 1900-03, 1905 (Tutt, *Br. Lep.*, 10: 131-132). Maidstone district* (Golding, *Entomologist*, 36: 72). Near Faversham (Chitty, *Ent. mon. Mag.*, 36: 238). Boxley, 1911 (Frohawk, *Nat. Hist. Br. Butts.*, 2: 125). Bredhurst; Walderslade; Burham Down (Woodcock, *Rochester Nat.*, 1948, 6 (133): 3). Burham Downs, 1948-49 (L. R. Tesch). Westwell (Scott (1950)); E. Scott tells me he has found ova here on *Anthyllis vulneraria*, also a larva on the inflorescence (C.-H.).

8. Dover (Bree, *Mag. Nat. Hist.*, 5: 335). Deal, very plentiful, 1858 (Harding, *Ent. week. Int.*, 4: 100). Near Folkestone, 1858 (Drury, *Ent. week. Int.*, 4: 102). Folkestone Warren and East Downs (Knaggs, *Qtly. J. Folkestone nat. His. Soc.*, 1869 (4), 82). Walmer (Shepherd, *Entomologist*, 17: 136). Dover; Folkestone; S. Foreland; Deal; Coombe Wood; Shorncliffe; various dates and recorders (Tutt, *Br. Lep.*, 10: 130 *et seq.*). Cockerling Wood near Canterbury, 1893, 1894, 1896; Wye Downs, 1894 (S. Wachter MS.). Kingsdown and Martin Mill, abundant (Carr, *Entomologist*, 35: 246). Folkestone, occasionally an autumn emergence, several August 21, 1900 (Freke, *Entomologist*, 34: 351); August, 1900 (Pickett, *Ent. Rec.*, 12: 272); July 6, 1903 (Kingsman, *Entomologist*, 36: 293). Wye Crown, 1920; Hawkshill Down, near Kingsdown, forty-eight on grass stems, June 14, 1924, plentiful, June 20, 1927 (H. G. Gomm, *Diary*). Crundale, two, July 5, 1931; Temple Ewell, many, June 21, 1936; Folkestone.—Warren, August 14, 1932, August 17, 1938, 1930, 1935, many June 18, 1937, 1946, 1953, 1956; on way up Wingate Hill, many 1928, 1932, many June 24, and June 27, 1936, 1935, many 1938; Dover Hill, three July 6, 1931, fifteen 1935, many 1941, including one August 24, several 1943, four 1950, one September 5, 1953; Downs, west of Canterbury Hill, small numbers at a time in 1934, 1943, 1945, 1946, 1947, two May 19, 1948, 1949, 1956

(A. M. Morley). Dover Cliffs, 1933; Alkham, July 31, 1934 (J. H. B. Lowe). St. Margaret's Bay, near lighthouse, 1939 (J. S. Wachter MS.). Barham Down, c. 1947 (A. G. Maconochie). Larkey Valley, a few, 1948, used to be abundant (J. A. Parry) (perhaps the same spot as S. Wachter's Cockerling Wood locality (C.-H.)). Dover Castle, several, May 21, 1950; Shepherdswell, several, June 23, 1952 (C.-H.). Kingsdown, 1952 (D. F. Harle). Near Nelson Park, St. Margaret's, twenty-four counted in one-and-a-half hours, June 28, 1953 (G. G. E. Scudder).

9. Ramsgate neighbourhood (Willson, *Entomologist*, 23: 139). Lord of Manor, Ramsgate, small colony (J. W. C. Hunt). Epple Bay, Birchington, not common in two or three colonies on the cliffs, 1927-33 (C.-H.).

VARIATION.—A rare ♂ ab., in which the ground colour is of a pale grey tint is *pallida* Tutt, of which the hollotype came from South Foreland (Tutt, *Br. Lep.*, 10: 109).

Main (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1905-06: 70) notes that a series he botained at Folkestone "were very varied in the amount of blue shown in the same sex".

Underside abs. with spots almost or quite obsolete have been recorded from Dover, by Bree (*Mag. Nat. Hist.*, 5: 335), and Webb (*Entomologist*, 21: 133); and from Folkestone, by Benton (*Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1912-13: 35). A. M. Morley has the following abs.: *paucipuncta* Courv., one; also 2 ♂♂ al. exp. 18 mm. and 28 mm. respectively, all three taken Walmer, June 13, 1928; 2 ♂♂, 1 ♀, with 2-4 spots on forewings and one on each hindwing, Folkestone Downs; ♂, with more than half the area of forewings and about $\frac{1}{3}$ of hindwings bright blue, Folkestone Downs, June 8, 1934.

In R. C. K. are the following underside abs.:—*semiobsoleta* Tutt, one, "Kent, H. A. Leeds, 17.6.30"; *caeca* Courv. (right side only), one, Folkestone, August, 1900, C. P. Pickett; *striata* Tutt, one, "Kent, 4 June 1922, R. H. Ratray".

FIRST RECORD, 1828: Stephens, *Haust.*, 1: 86.

[*Maculinea arion* L.: Large Blue.

Questionably Kentish.

The Large Blue is included on the basis of a few curious old records, none of which is properly authenticated. It seems likely, nevertheless, that the butterfly may have formerly occurred in Kent, for some of the terrain between Deal and Folkestone appears ideal, and there is moreover the fact that heretofore, the range of this insect was much wider than it is now. But if the species once inhabited our county, it is almost certain that it has now been extinct for at least 120 years.

In 1795, Lewin (*Insects of Great Britain*, 78) wrote: "It is out on the wing the middle of July, on high chalky lands . . . having been taken on Dover cliffs . . ."

In 1828, Stephens (*Haust.*, 1: 87-88) observed that it had "been caught near the signal-house on Dover-cliffs". The same recorder (*loc. cit.*) also states that "several specimens were taken in Kent during the past season [1827], I believe in the vicinity of Deal".

In 1832, Bree (*Mag. Nat. Hist.*, 5: 331) stated that "upon enquiry, I learn that Mr. Le Plastrier, in all his practice, never took the insect; though he has heard some vague accounts, from non-entomological reporters, of a large blue having occasionally been seen in the vicinity of Dover, which might possibly have been this rare species."]

HESPERIIDAE.

Pyrgus malvae L.: Grizzled Skipper.

Native. Chalk downs and rough chalky places, open woodland, commons, railway banks, etc.; on *Fragaria vesca*. Recorded from all divisions except 15. Perhaps most frequent in 6, 7, and 8, and in the woods of the Weald, but apparently never observed in large numbers, as is sometimes the case with *Erynnis tages* L. Few records for 2, 4, 9, 16; doubtful if still present in 2 (Sheppey), and 9.

"Generally distributed and common in most of the woods in the county (V.C.H. (1908)).

The butterfly is normally single brooded, but occasionally specimens are noted of what appears to be a partial second generation:—Chattenden, July 26, 1869 (J. J. Walker MS.), July 16, 1902 (Burrows, *teste* Raynor, *Entomologist*, **54**: 196); Cuxton, July 22, 1893 (Tutt, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1911-12: 15); Appledore, July 2, 1898 (Heitland, *Entomologist*, **31**: 221); Ashford, found in August, "but in greatly diminished numbers" (W. R. Jeffrey, *teste* Barrett, *Br. Lep.*, **1**: 222). In 1893, it appeared exceptionally early, having been noted at Eynsford on April 9 (Carpenter, in Tutt, *Br. Lep.*, **8**: 24); and in 1938, at the same locality on April 12 (Newman, *Entomologist*, **71**: 139). Six were noted in Folkestone Warren, on April 23, 1946; and a ♂ and ♀ in Reinden Wood, on July 13 the same year (A. M. Morley).

The larvae were found on Wild Strawberry (*F. vesca*) by D. F. Owen and J. F. Burton at Elmstead Woods (div. 1) in 1947.

2. Sheppey, one, 1919 (Betts, *Entomologist*, **53**: 67). Abbey Wood Marshes, on the bank bordering Woolwich Arsenal, 1954 (Showler, *Ent. Rec.*, **68**: 127).

4. Richborough, sparingly (D. F. Harle).

9. Sarre chalkpit, May 12, 1922, "saw plenty, flight sunshine" (H. G. Gomm, *Diary*).

16. Folkestone, one on the Leas, May 9, 1946; one in the town, May 16, 1952 (A. M. Morley).

VARIATION.—*Ab. taras* Bergstrasser appears to be local and very scarce in Kent. It has been recorded from Wigmore Wood (Chaney (1884-87), and Chattenden (Chaney, *op. cit.*) (Walker, *Ent. Rec.*, **10**: 101); and Reid (*S. East. Nat.*, 1904: 48) states that Goodwin took one near Watlington in 1904, and that another, a "well marked specimen", is in Maidstone Museum. I have one labelled "Near Ashford Kt. 27.5.1926. H. Wood"; and W. A. Cope showed me two specimens in his coll. approaching *taras*, taken by him at Watlington in 1908 and 1919 (C.-H.).

Morley (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1934-35: 50) exhibited an *ab.* taken at Folkestone in 1934, "with underside unusually dark".

In R.C.K. is one "with forewings powdered white", Eynsford, H. H. Clark, 1903; also an *ab. scabellata* Rev., labelled "Bidborough, Kent, 13.5.13", in E. D. Morgan's handwriting (C.-H.).

FIRST RECORD, 1823: "May 18 . . . caught the grizzle butterfly in Thong Lodge Field" (Arnold, *Robert Poccock*, 186)¹. A more positive identification dates from 1828: Darenth (Stephens, *Haust.*, **1**: 98).

¹It may be noted that Rennie (*Conspectus*, 20) calls this species "The Grizzle".

Erynnis tages L.: Dingy Skipper.

Native. Chalk downs and chalky places, woods, sand dunes, etc.; on *Lotus corniculatus*. Plentiful in 5, 6, 7, 8.

A partial second generation has sometimes been noted in Kent, as for example in 1833, 1893, 1898, 1901, 1933, 1935, 1938, 1939, 1940, 1942, 1945, 1947, 1948, 1949, 1961. In 1894, the butterfly was observed at Folkestone on April 1 (Hill, in Tutt, *Br. Lep.*, 8: 286), an exceptionally early date.

A larva was found by A. M. Morley in his garden in Folkestone on *Lotus corniculatus*, on August 19, 1946; and Miss C. A. Macdermott has observed the species ovipositing on this at Trottescliffe.

Obs.—In June 1950, on the edge of Long Rope Wood, Ham Street, I was most surprised to see one sunny morning, a worn example of this butterfly at rest on an oak trunk, and imbibing from the previous night's sugar (C.-H.).

S. Morris (*Diary*) writes that at Chilham Down (div. 8) on April 27, 1938, the butterfly was "attracted to *Viburnum lantana*, upon which blossom I saw it feeding on many occasions".

1. Bexley, 1891 (Bower, in Tutt, *Br. Lep.*, 8: 286). West Wickham, 1901 (Gardner, in Tutt, *Br. Lep.*, 8: 287). Shooters Hill; Orpington; Keston; Paul's Cray Common, fairly common (Tutt, *Wool. Surv.* (1909)). Bexley, railway bank, 1920 (Newman, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1920-21: 61). Sidcup, a few on the railway bank towards Bexley, June 3, 1923, not seen since (A. R. Kidner). Shooters Hill, several on the golf course, June 15, 1946; rather scarce, 1947; Hayes Common, 1947; Sundridge Park, common, 1947; Elmstead Woods, fairly common, 1947; near Joydens Wood (D. F. Owen). Petts Wood (F. Swain, in de Worms, *Lond. Nat.*, 1949: 79); 1951-52 (A. M. Swain). Holwood Park (J. F. Burton).

2. Erith Marsh, 1947 (D. F. Owen). Abbey Wood Marshes (Showler, *Ent. Rev.*, 68: 127). Bromley, 1948, 1949, 1950 (D. Lanktree).

3. Blean Woods, one worn, June 1, 1866 (Fenn, *Diary*). Bullockstone Hill, one, May 26, 1922 (H. G. Gomm, *Diary*). Blean Woods, locally plentiful (J. Shepherd). Between Canterbury and Herne Bay, September 1933 (Smart, *Entomologist*, 67: 39). Whitstable district (P. F. Harris). Oldridge Wood, c. 1947 (J. A. Parry).

4. Sparingly at Sandwich Bay on the dunes, and at Ebbsfleet (D. F. Harle).

6a. Darenth (Stephens, *Haust.*, 1: 99); 1872, 1900 (Tutt, *Br. Lep.*, 8: 285, 287); 1911, common 1912, 1915, 1925 (F. T. Grant). Chattenden, June 8, 1869 (J. J. Walker MS.); 1902 (Tutt, *Br. Lep.*, 8: 287); 1912, 1925 (F. T. Grant); two, June 3, 1958 (C.-H.). Swanscombe (B. K. West). Cobham, common (J. F. D. Frazer).

10. Brasted, two, July 26, August 8, 1933 (Prideaux, *Entomologist*, 67: 191); in suitable places, more abundant than *P. malvae* (R. M. Prideaux).

11. Near Watlington (Reid, *S. East. Nat.*, 1904: 49). Mere-worth Wood (H. S. Fremlin). Tonbridge, 1893 (Turner, in Tutt, *Br. Lep.*, 8: 286); scarce (H. E. Hammond). Borough Green, June 11, 1950 (C.-H.). Hoads Wood, 1959-60 (M. Singleton, M. Enfield, D. Youngs). Marden (W. V. D. Bolt).

12. Orlestone Woods.—June 4, 1950 (R. F. Bretherton); May 6, 1960 (R. G. Chatelain); Long Rope Wood, 1950; several, May 24, 1953, several, May 26, 1956 (C.-H.), Gibbons Brook, several, June 17, 1950 (A. M. Morley).

13. Pembury, common (Stainton, *Man.*). Tunbridge Wells, common (E. D. Morgan). Bedgebury, very common, c. 1950 (B. G. Chatfield). Old Hawkenbury Road, Tunbridge Wells, 1946-50; near Ashurst Lake, Langton, 1955 (C. A. Stace).

14. Tenterden (Stainton, *Man.*). Sandhurst, July 26, 29, 31, 1940 (Bull, *Entomologist*, **73**: 195). Iden Green, c. 1950 (H. Boxall). Hawkhurst, c. 1950 (B. G. Chatfield); definitely more common than *P. malvae* (A. Lawson, *in litt.*, xii.1957). Goudhurst, common (W. V. D. Bolt, *in litt.*, 1960). Tenterden, 1959-60 (C. Orpin). Woodchurch, May 17, 1949 (Bull., *diary*).

16. Near Shorncliffe *(Rodgers, *Ent. week. Int.*, **6**: 180). Hythe, 1898 (Hill, in Tutt, *Br. Lep.*, **8**: 287).

VARIATION.—According to S. Webb, "the coast form is whiter and more brightly-coloured than inland specimens" (*V.C.H.* (1908)).

Freke (*Entomologist*, **34**: 351) records taking one at Folkestone, August 9, 1901, "in fairly good condition, but small and pale; A. M. Morley has a ♀ taken Folkestone Warren, May 14, 1939, 'appreciably paler' than the others in my coll."; and I have a ♂, taken Wye, May 24, 1953, likewise distinctly pale (C.-H.).

In R.C.K. are the following abs.:—*brunnea-transversa* Tutt, Chatenden, 1900; *brunnea-variegata* Tutt, Bexley, 1893; *variegata* Tutt, Eynsford, 1910. Also, one with "hindwings variegated", Folkestone, 1923; and one with "black margin on forewing", Folkestone, 1924.

FIRST RECORD, 1828: Stephens, *Haust.*, **1**: 99).

Thymelicus sylvestris Poda (**thaumas** Hufn.): Small Skipper.

Native. Downs, rough grassy places, waysides, wood-borders, etc.; on *Holcus lanatus*, *H. mollis*, *Phleum pratense*. Found in all divisions.

"Common everywhere" (*V.C.H.* (1908)).

The butterfly is usually observed in fair numbers; in 1947, however, it was noted in exceptional abundance, A. M. Morley having estimated seeing 100 in Folkestone Warren on July 18; and on July 9, 1959, at Crundale Downs (div. 8), C. Haxby writes that this species and *T. lineola* were both "swarming in hundreds".

In parts of Kent, notably in div. 2, the species is to some extent replaced by *T. lineola* Ochs. Thus, in Sheppey, in 1893, Walker (*Ent. mon. Mag.*, **29**: 211) noted it in comparatively scanty numbers, the relative proportion of the two species being about ten *lineola* to one *sylvestris*; Betts (*Entomologist*, **53**: 67) states that, in 1919, he found *lineola* plentifully there to the total exclusion of *sylvestris*; though Fletcher (*Entomologist*, **34**: 71) records a few worn *sylvestris* seen on the island in 1900, but no *lineola*. On Cliffe Marshes in 1896, Bower (*Ent. mon. Mag.*, **33**: 43) found that *sylvestris* and *Ochlodes venata* Br. & Grey only represented about 2%, the rest being *lineola*. In the Lewisham district, D. F. Owen (*in litt.*) writing in 1947, says that nearer the Thames, its place is taken by *lineola*; and Burton (*Lond. Nat.*, 1954: 59) writing in 1954 with reference to the marshes between

Woolwich and Gravesend, states that *sylvestris* tends to be commonest in the rough fields and scrubland at the edge of the marshes and in these places often out-numbers *lineola*, but that in reclaimed marsh pasture, and especially on grassy river-walls, it is considerably less numerous than *lineola*; he furthermore states that in this same area, no *sylvestris* were seen on the open marshes after the floods of 1953.

In 1961, I watched *sylvestris* ovipositing in the sheath of Yorkshire Fog (*H. lanatus*), at Shoreham (div. 6), on July 31; and on the same species of grass at Long Rope Wood, Ham Street, on August 9 (C.-H.). Frohawk (*Nat. Hist. Br. Butts.*, 2: 165) says that in 1912, he observed females of this butterfly depositing on Creeping Soft-grass (*H. mollis*), and on "Cat's-tail grass" (*P. pratense*), on a chalk hill in Kent.

VARIATION.—Hills (*Ent. Rec.*, 13: 359) records one he took, Folkestone Warren, June 1901, in which the "anterior wings are of a silvery bone-colour, while the posterior wings are shot with an iridescent green". This became the holotype of ab. *pallida-virescens* Tutt.

S. Morris (*Diary*, 1937) wrote that he had very strong suspicion of interbreeding between this species and *T. lineola* in div. 3. He said that specimens of *sylvestris* which he had taken were superficially so near *lineola* that without close scrutiny it was not possible to separate them.

A ♂ taken by me, Folkestone Warren, August 1935, is cream coloured (C.-H.); and two others similar were taken there, on July 18, 1937 (A. M. Morley), and July 16, 1939 (Richardson, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1941-42 (2), 28), respectively. These three, together with a ♂ (possibly the same as that mentioned in Barrett, *Br. Lep.*, 1: 276) in Dale coll., labelled "J. Williamson, Folkestone" (*Ent. mon. Mag.*, 43: 134) may perhaps be referable to ab. *pallida* Tutt.

A. M. Morley has a ♂ which he took on the Dover Hill, Folkestone, July 25, 1943, with "the inner half of each forewing and the upper half of each hindwing pale".

In R.C.K. are an ab. *pallida* Mosley, ♀, "Gravesend, July 1930, W. Crocker"; and a ♂ ab. with "pale outer half", from N. Kent, July 1921.

FIRST RECORD, 1828: Darenth Wood; Dover (Stephens, *Haust.*, 1: 101).

T. lineola Ochs.: Essex Skipper.

Resident, probably native. Saltmarsh borders, rough grassy places, wood clearings, etc.; foodplant unknown. Recorded from all divisions except 10 (whence it is extremely unlikely to be absent), and apparently fairly generally distributed, though the paucity of records for certain areas gives little indication of its true distribution there. Certainly much restricted prior to about 1930, since when it has generally spread southward.

19th Century History.—On January 9, 1890, Jenner Weir exhibited specimens of *lineola*, "which he had obtained many years ago, but was not certain whether in Kent or Sussex" (Weir, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1890: 11). The earliest positively Kentish *lineola* that we can trace, however, were taken "on a sea-wall near Gravesend" (div. 2), and were exhibited by Milton on August 20, 1891 (Milton, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1891: 21). In September 1891, a series was

taken near Strood (probably in div. 2), and was exhibited by Boden the following October (Boden, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1891: 26). In 1893, Tutt noted it in N. Kent [Cuxton?] on June 24; and at Cuxton (probably div. 2) on July 1 (Tutt, *Ent. Rec.*, 4: 249); and in the same year, it was found to be plentiful on Sheppey (div. 2) (Walker, *Ent. mon. Mag.*, 29: 211). Bower records (*Ent. mon. Mag.*, 33: 43) that on Cliffe Marshes (div. 2), on July 13, 1896, he was struck by the great quantities of HESPERIIDAE, the majority of which upon examination proved to be *T. lineola*, there being present only about 2% of *T. sylvestris* and *Ochlodes venata*. In 1898, Walker (*Ent. Rec.*, 10: 101) states that it had "been met with not rarely in July, on the marshy banks of the Medway, below Strood" (div. 2).

1900-1935.—During this period, *lineola* was found to be widely distributed in div. 2, to exist inland to a limited extent in 1, also in 3, 4 and 6. It has been impossible, however, to trace any record of its occurrence elsewhere in the county prior to 1936; though there are strong indications that it was present in 7, and 12, at least during the early 1930's, if not long before.

In 1904, Reid (*S. E. Nat.*, 1904: 49) stated that it was absent from mid-Kent [Maidstone district], so far as he was aware; V.C.H. (1908), only gives Cliffe Marshes; and there is no mention of its occurrence in N.W. Kent by Tutt (*Wood. Surv.* (1909)).

In div. 2, H. C. Huggins observed it at Cliffe, from 1901-14, and in 1922; at Iwade and Chetney Marshes, from 1916-22, 1926-27, and in 1932; and at St. Mary's at Hoo, in 1922. It was noticed at various times on the river bank at Gravesend from 1910-27 (F. T. Grant); and A. R. Kidner (*Diary*) writes that he took a larva on St. Mary's Marsh, June 22, 1914; it was also observed on Sheppey in 1919 (Betts, *Entomologist*, 53: 67); and in thousands on Faversham Marshes in 1918 (Robertson, *Entomologist*, 52: 59). A. M. Morley (*in litt.*) writes that he noted it in small numbers on Chetney Marshes, July 1, 1929, and July 14, 1930; many near the Inn at Kingsferry Bridge, July 15, 1930, and in dozens at this place July 13-14, 1932, sitting at dusk on the long grass by the Swale.

It was recorded as being most abundant in July 1911, in the Eltham neighbourhood* (Jones, *Entomologist*, 44: 301), perhaps the first record for div. 1; and elsewhere in div. 1 was noted at Bexley, before 1914 (L. T. Ford); and as fairly plentiful on some rough ground at Crayford, adjoining Dartford Heath, July 24, 28, 1927 (A. R. Kidner).

In 1910 and 1913, it was noted at the Sanatorium, Gravesend (div. 6) (F. T. Grant); in 1931, it was observed at Ebbsfleet (div. 4) (H. C. Huggins); and in 1934-35, it was found by me in the woods about Broad Oak (div. 3) (C.-H.).

1936-45.—During this decade, *lineola* extended its range considerably, but owing to lack of recording, and doubtless also to lack of observation, our knowledge of the distribution of the species at this time, as well as of the extent of its spread and where and when it first appeared in new areas, is very incomplete.

Scott (1936) states that specimens were taken by A. H. Wood at Westwell (div. 7), and in Ham Street Woods (div. 12); but there is no record of when it was first noticed at these localities. A. H. Wood also found it along the Hythe Military Canal (div. 15), but exactly when

is not known (E. Scott, *in litt.*, 3.ix.1961); though this could not have been later than 1944 (the year of Wood's death).

In div. 3, where it was first noticed by me in 1934, but where one suspects it had already been known to J. Shepherd for some years, S. Morris (*Diary*) states that at Herne Bay in 1936, Shepherd saw some ♂♂ on July 6, and that on July 11 and 16, he himself noted the insect there "in swarms", in all vacant plots of building land that he visited; also a number in 1936, at Kemberland Wood; E. Blean Wood; Westbere Common; and he adds that all round this district, *lineola* seemed to outnumber *thaumas* by at least 25 to 1, though he suggests this may have been because *thaumas* was scarce in 1936. Morris (*Diary*) wrote that in 1937 it was generally plentiful locally at Kemberland and elsewhere in the Sturry neighbourhood, but less so than in 1936, and that it occurred in about equal numbers with *thaumas*; and in the same neighbourhood in 1938-39, it was rather uncommon. I see from my diary that in 1944, I noticed *lineola* as fairly numerous in Little Hall Wood on July 5 (C.-H.).

In Thanet, the butterfly was taken by W. D. Bowden at Northdown c. 1937, apparently the first record for div. 9; and at Broadstairs (also in this div.) S. Wachter (*Diary*), writes that he took two there in July 1939.

Morley (*Entomologist*, 79: 245) states that the earliest record for the Folkestone area, is that of two ♂♂ and one ♀ taken at the foot of Sugarloaf Hill, Folkestone, by D. Smith in late July 1945; which it appears, is also the first record for div. 8. The same year, a ♀ was taken on some waste ground at Jesson, St. Mary's Bay (div. 15) (Morley, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 36).

Elsewhere in Kent, *lineola* doubtless continued to be widespread in div. 2, and at Faversham Creek in the extreme east of this division, was observed in some numbers by A. M. Morley c. 1942. In div. 1, it was noted by A. S. Wheeler, at Bexley in 1942 and 1944; the only records we have for this division during this decade, though it must almost certainly have been present there in other localities at this time.

1946-1961.—Between 1946 and 1950, the butterfly was noticed in many new localities in the county, and in most of them it occurred fairly plentifully.

In N.W. Kent, it was found to be widespread in div. 1. Thus, in 1946, it was noted at Deptford and Greenwich Park; in 1947, at Sidecup, Bexley, Lee, Joydens Wood, Plumstead, Blackheath, Charlton (D. F. Owen); at Shooters Hill in 1946, and at Kidbrook and Woolwich Common in 1947 (J. F. Burton). Also at Petts Wood in 1947 (F. Swain), and 1948 (Evans, *Entomologist*, 82: 117); at Welling in 1948 (A. Heselden), and at West Wickham in 1950 (C.-H.). In div. 6a, it was noted in 1947, at Swanscombe (F. Swain), at Darenth and Chattenden (D. F. Owen); and in div. 6, was taken at Shoreham, 1948-50 (A. S. Wheeler), Pinden, 1949 (E. J. Hare), and at Eynsford, 1950 (A. M. Swain). There are also records of its having been seen about this time at Cliffe and Higham (div. 2), Gravesend (div. 2 and 6), and Dartford (div. 1 and 2) (B. K. West); in 1950, at Erith (div. 2) (S. Wakely); and from 1946-48, on Abbey Wood Marshes, and on the marshes below Erith and Gravesend (all in div. 2) (D. F. Owen).

In the Weald, the butterfly was noticed in 1949, at Hawkhurst (B.

G. Chatfield), on August 5, at Sandhurst (G. V. Bull, *Diary*) (both in div. 14); and in the same year at Swift's Place, Cranbrook (div. 13) (H. Boxall and W. F. Hodge); the first records, apparently, for these divisions. It was also noted at Gills Green (div. 14) in 1950 (B. G. Chatfield); and in div. 12, was found by E. Scott, near the Ashford Warren (Scott (1950)).

In East Kent, in div. 16, a ♀ was taken in 1947 at Sandgate on August 8 by A. M. Morley; and it was noted in 1948 at Aldington by E. Scott. In div. 8, C. G. M. de Worms and R. Fairclough took it on Dover Hill, Folkestone, August 3, 1946, also many the next day on the Folkestone Downs (A. M. Morley); C. M. Gummer found it at Betteshanger, in which area it had been looked for unsuccessfully c. 1938 (E. & Y. (1949)); and further inland in this division, was noted in 1948 at Brook (C. A. W. Duffield); and was taken by me at Adisham on July 15, 1946; on Barham Downs, August 5, 1950; and further north at Sandwich (in div. 4) on July 2, 1949 (C.-H.). In div. 7, it was again noted at Westwell in 1947 (E. Scott), in which locality it was first recorded in 1936.

In the Blean area (div. 3), my diary for 1946 shows that I took it at Broad Oak on July 11 and 27, and that both sexes were numerous at Little Hall Wood, on July 22 (C.-H.).

Since 1950, *lineola* has been found to be fairly generally distributed throughout the county, and to have been noted in two divisions from which there appears to have been no previous record. Thus, in div. 5, I took it at Biggin Hill, on July 20, 1952, in August 1960, and at Downe, on July 24, 1955 (C.-H.); and in div. 11, it was noted at Borough Green in 1955, by Miss C. A. MacDermott.

Among the very many localities for which there are records of its occurrence since 1950 may be mentioned the following:—West Wickham, 1952, Hayes Common, 1952, 1955, 1961 (div. 1); Sandwich, 1955, 1957, 1961 (div. 4); Eynsford (div. 6) 1955; Eastwell Park, 1951, Bicknor, 1960, Queendown Warren, 1961 (div. 7); Crete Road, Folkestone, 1955, Barham Downs, 1951 (div. 8); Ham Street, 1951 (div. 12); Lydd, 1960 (div. 15); Hythe, 1951 (div. 16) (C.-H.). Shoreham, 1953 (div. 6) (A. S. Wheeler). Pluckley (div. 11); Goudhurst (div. 14), "in strong isolated colonies in woodland" (W. V. D. Bolt). Tenterden (div. 14), 1959-60 (C. Orpin). Hoads Wood (div. 11), 1959-60 (M. Singleton, M. Enfield, D. Youngs). Temple Ewell (div. 8), 1957 (R. F. Bretherton). Abbey Wood (div. 1 and 2), 1952 (A. J. Showler). Hawkhurst (div. 14), 1955 (B. G. Chatfield). Maidstone.—Boxley Road (div. 7), one, 1955 (E. Philp); but only *sylvestris* present on Burham Down (div. 7) (J. F. D. Frazer, *in litt.*, 22.x.1955). Dartford Heath, 1951, Bexley, 1952 (div. 1) (A. Heselden). Middle Hill, Folkestone (div. 8), 1960 (Miss J. Clapham). Richborough (div. 4) (D. F. Harle). Erith Marshes, Slades Green (div. 2), and a chalkpit at Swanscombe (div. 6), c. 1955, and seen since in same area (A. A. Allen). Folkestone Warren (div. 8), 1952 (A. M. Morley). Ham Street, 1954 (P. Cue). Crundale (div. 8), 1960 (C. R. Haxby).

FIRST RECORD, 1891: Near Gravesend (Milton, *Trans. Cy. Lond. ent. nat. Hist., Soc.*, 1891: 21).

Ochlodes venata Br. & Grey: Large Skipper.

Native. Bushy places, open woods, shrubby waysides, etc.; food-plant unknown. Fairly plentiful and found in all divisions.

"Of common occurrence throughout the county" (V.C.H. (1908)).

The records show it to have been locally uncommon in N.W. Kent in the past, but to have become rather plentiful there within recent times (cf. Fenn, *Ent. Rec.*, 6: 229; Wool. Surv. (1909); de Worms, *Lond. Nat.*, 1949: 80). Burton (*Lond. Nat.*, 1954: 60) states that on the N.W. Kent marshes situated between Woolwich and Gravesend, it is almost confined to the rough scrub and hedgerows at the fringe of the marshes and in such situations is fairly common, but has not been noticed west of Erith; and E. G. Murray (*in litt.*, 1960), writes that it does not extend as far west as Deptford, although *T. sylvestris* is present there.

The records in general tend to show that the butterfly normally produces one long protracted emergence; yet, it is difficult to believe that in favourable years there is not a limited second brood. In 1893, the butterfly was noted at Chattenden as early as April 17 (Tutt, *Br. Lep.*, 8: 146); and in 1910, at Gravesend, as late as August 25 (F. T. Grant). Walker (*Ent. Rec.*, 10: 101) states that in the Chatham district it is common from May to August, and that it is, moreover, partially double brooded there; he does not, however, offer any further information in support of this statement.

A. A. Allen found a larva of this species in his garden at Blackheath in October c. 1956; it was discovered in a pile of dryish litter, consisting of dead grass, "probably mostly Couch-grass". Kidner (*Diary*) writes that he found a larva of this species at Sidcup, May 5, 1927, but does not give the circumstances.

It may be of interest to record that I observed this butterfly at Downe (div. 5), June 24, 1958, imbibing from Fragrant Orchid (*Gymnadenia conopsea*) (C.-H.).

VARIATION.—Of this normally very constant species, only two aberrations of any consequence are known to me from Kent.

Garrett (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1919-20: 94), exhibited an "extremely dull suffused specimen", from Bexley, and "very similar to those from the higher Swiss altitudes".

Frohawk (*Nat. Hist. Br. Butts.*, 2, 58) depicts a ♀, from "Lyminge, 1908, B. W. Adkin coll."; he again figures (*Vars. Br. Butts.*, 190, pl. 47, fig. 4) what appears to be the same specimen, gives it as "captured by Goodyear, 1908, at Hythe", describes it as "of a deep brown colour and with the markings just discernible . . . colour of the under surface . . . rufous-brown", and names it ab. *fuscus*. An ab., seemingly this specimen, and stated to have been taken at Lyminge, was included in the B. W. Adkin sale, December 13, 1948¹.

FIRST RECORD, 1828: Darenth Wood (Stephens, *Haust.*, 1: 102).

¹It appears, furthermore, that this same specimen, "a very dark brown form", was exhibited by Adkin (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1929-30: 40), and erroneously recorded as having been taken at Eltham.

Hesperia comma L.: Silver-spotted Skipper.

Native. Chalk downs and rough fields on chalk, also formerly on the Lower Eocene of div. 3¹; on *Deschampsia caespitosa*. Very local.

3. Herne Bay, eleven, 1860 (Butler, *Ent. week. Int.*, **8**: 172); "fairly plentiful but very local at Herne Bay" (A. U. Battley, in Tutt, *Br. Lep.*, **8**: 188).

5. Chevening, July 29, 1858 (Stanhope, *Ent. week. Int.*, **4**: 156). Farnborough, three, 1901 (W. Barnes, in *Wool. Surv.* (1909)).

6. Near Gravesend (see First Record). Paddlesworth; Cuxton; common (Chaney (1884-87)) (Walker, *Ent. Rec.*, **10**: 101) Cuxton, 1893 (Tutt, *Br. Lep.*, **8**: 185). Shoreham, 1899 (Tutt (*Wool. Surv.* (1909))); fairly common (S. F. P. Blyth); rifle range (H. E. Hammond). Near Eynsford (Tutt, *Wool. Surv.* (1909)); in profusion, 1931 (Greenwood, *Lond. Nat.*, 1931: 99). Eynsford, 1928, 1934 (*Lond. Nat.*, 1928: 73, 1934: 86); plentiful, 1937; 1939; 1947 (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1937-38: 50; 1939-40: 47; 1947-48: 69); plentiful on the bombing range (F. D. Greenwood). Fields above Otford (R. M. Prideaux). Birling, September 2, 1910, four, August 13, 1911, one, August 3, 1912, ten, August 21, 1916, August 22, 1921, August 9, 1923, August 29, 1925 (F. T. Grant); common, 1951 (H. C. Huggins). Wrotham, five, August 21, 1917, five, August 8, 1923 (F. T. Grant); fairly common (B. K. West). Magpie Bottom, common on several large chalk hills (1947) (D. F. Owen); not plentiful since, to 1957 (J. F. Burton). Near the Birches, Eynsford, ♀, August 23, 1950; ♂, August 21, 1952 (A. Heselden).

7. Burham; between Snowledge and Bluebell Inn (Chaney (1884-87)). Chatham district*, 1891 (Tyrer, *Ent. Rec.*, **2**: 232). Boxley Warren (Walker, *Ent. Rec.*, **10**: 101); two, 1953 (B. G. Chatfield). Maidstone district* (Golding, *Entomologist*, **36**: 72). Bluebell Hill, September 3, 1912 (F. T. Grant); on the downs above Burham, six, August 31, 1941 (A. M. Morley). Burham Down, especially at the foot along the Pilgrim's Way; Boxley Down (Woodcock, *Rochester Nat.*, 1948: **6** (133) 5). Detling, 1928, 1929, 1933, 1939 (G. V. Bull, *Diary*). Burham Downs, August 18, 1957 (E. Philip).

8. Dover.—(Bree, *Mag. Nat. Hist.*, **5**: 336) (Curtis, *Br. Ent.*, 442); four, "Dover, Leplastrier", 1846 (Raynor, *Ent. Rec.*, **24**: 292); "so common on most chalky soils is almost rare here" (Webb (1899)); August 8, 1903 (Pickett, in Tutt, *Br. Lep.*, **8**: 186); four, on buddleia, 1936 (Gardiner, *Ent. Gaz.*, **10**: 5); Dover Cliffs, two ♂♂, four ♀♀, August 28, 1895, six, August 4, 1901; Poulton, nine, August 9, twelve, August 20, 1899, twenty-four, August 11, eighteen, August 18, 1901, one, August 5, 1903; Elms Vale Slopes, one, August 7, 1904, one, August 19, 1906; Chilton to Kearnsey, seventeen, April 14, 1899 (H. D. Stockwell, *Diary*). Deal, September 7, 1860; worn, August 5, 1867 (Fenn, *Lep. Data MS.*). Under the cliff near Kingsdown (Hall, *Ent. mon. Mag.*, **24**: 77). Between Kingsdown and St. Margaret's Bay (Shepherd, *Entomologist*, **17**: 136). Between St. Margaret's and Dover, two, August 23, 1928 (H. G. Gomm, *Diary*). Temple Ewell, common, fresh, August 14, 1939 (A. J. L. Bowes); plentiful, August 3, 1947 (C.-H.). Alkham; Whinless Down (E. & Y. (1949)). Folkestone.—On the cliffs towards Dover (Knaggs, *Qtly. J. Folkestone nat. Hist. Soc.*, 1869 (4), 82); "rare in the Folkestone area, for which I have only three records: Dover Hill, one, August 27, 1944, ♂, August 21, 1946, one, worn, August 7, 1947" (A. M. Morley). Near Canterbury (Parry, *Entomologist*, **5**: 394). Barham Downs (Barrett, *Br. Lep.*, **1**: 297); one, August 5, 1950 (C.-H.).

Wye district; Ashford district (Tutt, *Br. Lep.*, 8: 188). Crundale, six, August 8, 1935 (A. M. Morley). Brook to Crundale (Scott (1936)). Sole Street, 1939, 1941-42 (J. S. Wachter MS.) (perhaps the Crundale locality aforementioned (C.-H.)). Stowting (C. A. W. Duffield). Chilham Downs, August 1931 (A. A. Allen); plentiful, 1935-36 less so in 1937-38 (C.-H.), August 14, 1939, "watched a ♀ insect depositing here to-day, she settled on a very insignificant plant of *Aira caespitosa*, very sun scorched and withered, and here deposited a couple of ova. . ." (S. Morris, *Diary*).

VARIATION.—Raynor (in Tutt, *Br. Lep.*, 8: 157) observed that he had a ♂ from North Kent, "with the outer margins of forewings and hindwings much clouded with black and the androconial streak much intensified"; also, "a ♀ from North Kent with the central areas of forewings and hindwings brightly fulvous, giving the whole insect a very light appearance". Tutt (*Br. Lep.*, 8: 157) stated that he had two ♂♂ from Cuxton which come near to *ab. clara* Tutt.

FIRST RECORD, 1822: near Gravesend, July 4, 1822 (Arnold, *Robert Pocock*, 141).

¹A similar instance of this species occurring off the chalk in Northamptonshire, at or about the same time, is cited by Barrett (*Br. Lep.*, 1: 297-298) on the authority of Bree.

ADDITIONS AND CORRECTIONS TO VOL. 1

GENERAL

pp. 1-7—

At the head of each of these pages for "Supplement No. 1" read: Lepidoptera of Kent

pp. 1-16—

These pages were erroneously numbered again 41-48, 101-108.

p. 4:

line 9 from top—after "locality" add: On the other hand, a number of different localities in the same area may sometimes be disguised under one name.

line 22 from bottom—for "Dartnth" read: Darenth

p. 5:

line 3 from top—for "Q336548" read: R336548

line 19 from top—for "western" read: northern

line 15 from bottom—for "Q035505" read: R035505

line 12 from bottom—"Royal Oak" is in north Sheppey (cf. Walker, *Trans. ent. Soc. S. Eng.*, 7: 81-140), and evidently near the cliffs on the north coast, but I have been unable to locate it on the National Grid Ordnance Survey, scale 1" to the mile.

line 10 from bottom—for "Q220415" read: R220415

line 6 from bottom—for "Q895352" read: 895352

p. 7:

line 5 from bottom—for "*E. egenaria* H.-S. (*arceuthata* Frey.)**" read: *E. intricata* Zett. ssp. *arceuthata* Frey.*

line 2 from bottom—for "*Coleophora otitae* Zell.," read: *Coleophora otitae* Zell.*,

p. 12:

line 4 from top—The official abbreviation for Loudon's *Magazine of Natural History* is *Mag. nat. Hist. J. Zool.*, which should be

substituted here for "*Mag. nat. Hist.*", and wherever this appears hereafter.

p. 16—

At the bottom of this page delete: "(To be continued)."

p. 42:

line 13 from top—for "L. N. Tesch", and wherever this appears hereafter, read: L. R. Tesch

SPECIES

P. machaon L.

p. 11:

line 7 from bottom—for "1828" read: 1827

p. 12:

line 5 from top—add: In J. C. Dale, *Lep. Reg.* (Dale MS. S64), under *P. machaon*, there appears the following entry: "Dover, June 21, 1828".

p. 13:

line 12 from bottom—after "1946:" insert: Sheerness, one taken, April 28 (O. Davis).

lines 9 and 10 from bottom—J. F. Burton (*in litt.*) writes that for a number of reasons he believes that this was "not a genuine wanderer, but a set specimen thrown there by some person".

p. 14:

line 10 from top—after "[" add: (

line 16 from top—before "]" add:)

P. bianor L.

p. 14:

line 17 from bottom—after "278." add: *Entomologist*, 54: 244)

A. crataegi L.

p. 16:

line 9 from bottom—before "1882" insert: 1878: One very small ♂, labelled "Kent, 1878" (R. F. Bretherton coll.).

p. 17:

line 8 from top—for "1907" read: 1909

line 19 from bottom—A MS. note of A. G. Peyton has been submitted to me by his widow Mrs Florence Peyton, in which the dates of capture of these Stourmouth specimens are given as July 8 and 11, 1908; for "c. 1914" therefore, read: 1908

line 13 from bottom—before "1920" insert: 1918: "The basis of my statement (in *Ent. Gaz.*, 2: 224) that it still existed somewhere near Sturry in 1918 is that when I was a school-boy at Clifton in 1922, one of the masters, W. R. Taylor, who was a reliable lepidopterist, showed me his series of *crataegi*. My recollection is that he had a nice short series of six or eight; he told me that he had caught them near Sturry in 1918, when he was convalescing from war-wounds in hospital in the district. I gathered that he had been taken to the place by a local collector, and that *crataegi* was quite common there; but they restricted their catch because it was already so local" (R. F. Bretherton, *in litt.*).

p. 18:

line 9 from top—for "T. G. Gomm" read: H. G. Gomm.

P. brassicae L.

p. 18:

line 7 from bottom—after "*Reseda*" add: and *S. officinale**P. rapae* L.

p. 20—

Stace (*Entomologist*, **92**: 222) records a ♂, taken Flimwell, August 15, 1959, al. exp. 31 mm.Alston (*Bull. Amat. Ent. Soc.*, **17** (203) 3) records that on July 6, 1957, while crossing from Dover to Calais, he noted *rapae* apparently emigrating from Kent to France.*P. napi* L.

p. 21—

One in Barton Road, Dover, October 31, 1897 (H. D. Stockwell, *Diary*).*P. daphnidice* L.

p. 21:

line 5 from bottom—for "27" read: 28

p. 22:

lines 10-11 from top—for "at Margate in 1835" read: at Margate in 1859

line 20 from top—One taken near S. Foreland Lighthouse by Spencer, August 6, 1858 (Stevens, *Proc. ent. soc., Lond.*, 1858: 37), may be this.

lines 1-2 from bottom—enclose the 1887 record within square brackets.

p. 23:

line 14 from top—delete "(1942)" where it appears the second time.

line 15 from top—after "66" add:)

line 18 from top—for "Frowhawk" read: Frohawk

A. cardamines L.

p. 25:

lines 18-19 from top—delete "This is also the first British record".

line 22 from bottom—for "4" read: 3

A. belia Cram.

p. 25:

line 19 from bottom—delete the first pair of round brackets.

L. sinapis L.

p. 27:

lines 2-3 from top—in both cases for "(C.H.)" read: (C.-H.)

C. hyale L.

p. 27:

line 25 from top—for "Eynesford" read: Eynsford

C. calida Vty.

p. 29:

line 9 from top—after "(R.C.K.)" add: Two taken by E. G. Neale, September 15, 18, "in some fields inland behind Deal on way to Mongham" (div. 8) (E. G. Neale, *in litt.*).*C. croceus* Fourc.

p. 29:

line 19 from bottom—for "L." read: Fourc.

p. 30:

line 3 from bottom—add: Frohawk (*Vars. Br. Butts.*, plt. 44, fig. 1) figures a ♀, taken Broadstairs, September 9, 1928, which he names *pallida-obsolata*.

p. 31—

Rowberry (*Entomologist*, **93**: 161) describes in detail a ♂ taken Lympe, September 14, 1959, which appears to be a somatic mosaic.

lines 9-10 from top—delete, and substitute: First Record, 1717: "*Papilio crocea* . . . The Saffron Butterfly, . . . seen about Deptford" (Petiver, *Papilionum Britanniae*, 1).

G. rhamni L.

p. 31:

line 19 from bottom—after "Dartford." insert: Fletcher (*Entomologist*, **34**: 72) records a ♂, Sheppey, August 11, 1900.

"Larvae plentiful on spindle (*Euonymus europaeus*) in the lane by Eynsford station, 1906, 1907" (W Barnes MS.).

P. megera L.

p. 33:

line 26 from bottom—for "13-16" read: 13, 15-16

p. 34—

It was noted at Hawkhurst during 1867-68 (J. C. Melvill, jun., *Compendium Entomologicum* MS.), the only record for div. 14 during the 1827-1899 period.

p. 36—

Broadstairs (div. 9), May 26, 1952 (G. V. Bull, *Diary*). Dungeness (div. 15), June 3, 1950 (R. F. Bretherton).

Fearnehough (*Proc. S. Lond. ent. nat. Hist., Soc.*, 1958: 26, plt. 3, fig. 8) exhibited six ♀♀ abs. with banded forewings, obtained in F₂ generation reared from ♀ ab., taken Folkestone, May 1958.

P. aegeria L.

p. 37—

Between Hawkhurst and Hartley Turnpike, Cranbrook (div. 14), August 9, 1869 (J. C. Melvill, jun., *Compendium Entomologicum* MS.).

p. 38—

H. D. Stockwell (*Diary*) noted it near Dover at Bushy Ruff and Kearsney Nest as follows: 1895, ten May 8; 1896, thirty-nine on four visits between April 4 and May 13, including twenty on April 27; 1897, nine, on four visits between April 25 and May 23; 1898, fifteen on three visits between April 24 and May 22; 1899, two July 9, ♂ August 14; 1900, one April 21.

Shoreham, one taken "towards the end of July 1900 . . . the only time I ever saw the species in the Sevenoaks area between 1898 and 1905" (H. Symes, *in litt.*).

p. 39—

Folly Shaw, Tunbridge Wells (div. 13), two, summer, 1946, (C. A. Stace).

p. 40—

Waltham (div. 8), one, August 1954 (J. W. C. Hunt). Cowden (div. 13), ♂, October 14, 1961 (C.-H.).

E. semele L.

p. 41—

Between Bromley and Chislehurst (div. 1), one on buddleia, August 2, 1959 (D. R. M. Long).

Dartford (div. 1), 2-3 seen on buddleia in garden close to Dartford Heath, August 1961 (B. K. West).

Knockholt, 1949; Cudham, 1950 (both in div. 5) (D. Lanktree).

p. 42:

line 17 from top—for "A. G. Greenwood" read: A. Greenwood

M. jurtina L.

p. 44—

There are indications that in a particularly favourable season, *jurtina* may produce a partial second generation. Thus, A. M. Morley notes that at Folkestone in 1945, two were seen on June 2, an exceptionally early date, and that in the same year, moreover, two fresh examples were seen there as late as September 29.

p. 45—

Ab. *postaurolancea* Leeds, ♀, taken Shoreham (div. 6), by R. M. Craske, July 5, 1961.

A ♂ ab., taken by D. Smith, Folkestone Downs, July 30, 1945, "is exactly like the one illustrated by Frohawk which he called *radiata*" (A. M. Morley).

line 8 from top—add: Another *anommatata* ♂, taken by D. Marsh, Herne Bay, 1935, is recorded by Frohawk (*Vars. Br. Butts.*, plt. 10, fig. 1); and a ♂ approaching this ab. is recorded from "S. E. Kent", by Self (*Proc. S. Lon. ent. nat. Hist. Soc.*, 1958: 39).

line 20 from top—for "undertaken" read: noted

M. tithonus L.

p. 46—

Bromley (div. 1), 1948, 1949, 1950; Cudham (div. 5), 1950 (D. Lanktree). Hayes Common (div. 1), 1961 (C.-H.). "In the tidal saltmarshes and water meadows of the Medway near Halling" (div. 2), c. 1955 (W. D. Hamilton). Westwell (div. 7), a few, 1958-60 (M. Singleton, M. Enfield, D. Youngs).

p. 47—

Betteshanger (div. 8) (D. F. Harle, *in litt.*, 1960). Dungeness (div. 15), a few, August 19, 1958 (E. C. Pelham-Clinton); numerous, 1961 (R. E. Scott).

C. pamphilus L.

p. 48:

line 25 from bottom—for "1832" read: 1831

A. hyperanthus L.

p. 49—

Ab. *lanceolata* Shipp, and other abs. from "S.-E. Kent", exhibited (Self, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1958: 39). K. W. Self (*in litt.*, 8.v.1960), writes that since 1956, he has "taken or seen more than a dozen specimens" of *lanceolata*, at Folkestone.

M. galathea L.

p. 50—

Stodmarsh (div. 4), a few, August 2, 1958 (E. Philp).

Beadell (1933, *Nature Notes of Warlingham and Chelsham*, 125) states that one day he took six *galathea* at Shoreham (div. 6)*, but does not say when.

p. 51—

Queendown Warren (div. 7), one only, July 7, 1961 (C.-H.).
Tenterden (div. 14), 1959-60 (C. Orpin). Appledore (div. 14),
August 5, 1941 (Bull, *Diary*).

A. iris L.

p. 54—

Ham Street, 1937 (W. Stickles, *vide* Bull, *Diary*, 16.7.1937).
Heslop and Stockley (*Ent. Rec.*, **73**: 80) record a ♂ ab. *lugenda*
Cab., taken by Bentley, Chattenden, 1878, the underside of which
they describe and name ab. *chattendeni*.

L. camilla L.

p. 56—

R. F. Haynes (*in litt.*) writes that he saw one at Sparrow Com-
mon (div. 1), on bramble blossom, on July 15, 1934.

V. atalanta L.

p. 59—

A farmer named Tharp, of Blaxland, Broad Oak (div. 3), told me
that he saw an *atalanta* flying there in February 1950, and that
another (the same one?) was seen there by his brother in January
that year (C.-H., *Diary*, 1950). *V. atalanta* was seen at Down-
gate, Sandhurst (div. 14), on February 17, 1950 (Foster, *vide*
Bull, *Diary*); note also Morley's record of one seen *the same day*,
by Walton, "sunning itself" at Folkestone.

V. cardui L.

p. 61—

Higham (div. 2), two larvae on *Malva sylvestris* (*Proc. S. Lond.*
ent. nat. Hist. Soc., 1959: 89).

V. huntera F.

p. 62:

lines 13 and 18 from bottom—delete round brackets.

N. io L.

p. 62—

The species is recorded from div. 15: one was seen by R. E.
Scott, at Dungeness on August 27, 1961.

p. 63:

line 25 from bottom—add: S. Morris (*Diary*), however, writes
that at Paddock Wood (div. 3), on June 30, 1939, he found full-
grown larvae feeding on Hop, in preference to Stinging Nettle,
which was plentiful in the locality

N. antiopa L.

p. 64—

Bouchard (*Proc. ent. Soc. Lond.*, 1852: 30) records that he took
antiopa near Dover in July 1852.

p. 66—

Plumstead (div. 1), one seen by W. A. Cox [1945] (Hards, *vide*
Showler, *Ent. Rec.*, **68**: 127).

The occurrence of *antiopa* during the period 1950-1961 inclusive,
is suspect owing to releases. The most recent consignment of
some fifty examples was liberated on July 31, 1961 (cf. Newman,
Ent. Rec., **73**: 189).

line 25 from bottom—for "1954" read: 1949

N. polychloros L.

p. 69:

line 20 from top—before “1902” add: Dover, ♀, April 21, one, July 28; Ewell Minnis (div. 8), ♀, April 24 (H. D. Stockwell, *Diary*).

p. 71—

1958: Willesborough Lees (div. 12), one taken in a garden in September (D. Youngs).

P. c-album L.

p. 73:

line 23 from top—add: Tunbridge Wells (div. 13), a larva on Stinging Nettle, c. 1940 (S. F. P. Blyth); “larvae common in hop gardens, but are decreasing owing to sprays” (C. A. Stace, *in litt.*, 1959).

p. 74—

Littlestone (div. 15), one, August 5, 1941 (Bull, *Diary*).

Close to the border of the metropolis, A. A. Allen noted one at Michaelmas Daisies in a garden at Blackheath (div. 1), September 18, 1960, “the first certain specimen for a good many years at Blackheath”.

p. 75:

line 2 from top—add: Stodmarsh (div. 4), two, August 2, 1958 (E. Philp).

line 16 from top—add: Morris (*Diary*) writes that he took this specimen in October 1936, and described it as “dark mahogany”; another similar example was seen by him at Broad Oak, October 16, 1939. They appear referable to ab. *neole* Oliver.

line 20 from top—for “1832” read: 1831

A. paphia L.

p. 76—

Knockholt, 1948; Timberden Bottom, 1948; Cudham, 1950 (all in div. 5) (D. Lanktree).

Westwell Downs (div. 7), August 12, 1929 (A. A. Allen).

line 6 from bottom—add: Mid-Kent Woods, one, July 16, 1936 (Newman, *Entomologist*, 69: 215).

A. cydippe L.

p. 77—

Duffield (*Trans. Folkestone nat. Hist. Soc.*, 1954: 23) states that in “the Wye area”, in 1954, “a small male *Adippe* . . . put in an appearance in September”.

p. 78:

line 10 from top—for “Endfield” read: Enfield

line 15 from top—add: Orlestone Woods, common, 1958-60 (M. Singleton, M. Enfield, D. Youngs).

A. niobe L.

p. 78:

line 2 from bottom—for “Y. A. Parry” (as in *Entomologist*, 80: 21) read: F. A. Parry

A. aglaia L.

p. 79—

The species is on *Viola hirta*; S. Morris (*Diary*) having observed ♀♀ ovipositing on this at Chilham Downs (div. 8), July 29, 1938.

line 17 from bottom—add: Near Thornden Wood, two ♀♀, on clover, August 25, 1936 (S. Morris, *Diary*).

p. 80:

line 10 from bottom—after "14." insert: Appledore Heath, August 16, 1939 (Bull, *Diary*).

p. 81—

Stevens (*Proc. ent. Soc. Lond.*, 1851: 65) exhibited an ab. "suffused with black", taken Darenth Wood, 1849.

A. lathonia L.

p. 83:

line 26 from bottom—before "Goss Green" insert: 1945:

lines 25 and 24 from bottom—for "43: 101" read: 82: 41

line 24 from bottom—The locality at Brook where this specimen occurred, was in the Devil's Kneeding Trough, which is in div. 8.

C. euphrosyne L.

p. 84—

Bromley (div. 1), 1948, 1949, 1950; Timberden Bottom (div. 5), 1950 (D. Lanktree).

A. selene Schiff.

p. 86—

Marsh Quarter, Sandhurst (div. 14), May 30, 1939; Crundale (div. 8), one, June 28, 1941 (Bull, *Diary*)

p. 87—

Self (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1958: 39) exhibited a ♂ ab. from "S.E. Kent", in which the hindwings had confluent marginal spotting.

M. athalia Rott.

p. 87—

Blean, 1946, larvae found commonly, feeding on *Plantago lanceolata* (D. R. M. Long).

p. 88—

Pine Wood (div. 3), one seen, c. 1948 (D. F. Harle).

Cockering Wood (div. 8), one, c. 1947 (J. A. Parry).

line 4 from bottom—after "italics" insert: in the last two lines

line 3 from bottom—for "previous" read: other known

p. 89—

Ab. *cymothoe* Bartol, Blean, 1936 (Frohawk, *Vars. Br. Butts.*, plt. 5, fig. 3).

E. aurinea Rott.

p. 91:

line 16 from top—before "In" insert: Ham Fen.—April 13, 1905, "took larvae of *aurinea* at Deal"; June 17, 1906, twelve imagines, "they are very worn" (H. D. Stockwell, *Diary*).

p. 92:

line 18 from top—for "1832" read: 1831

for "4" read: 5

H. lucina L.

p. 92:

line 1 from bottom—add: Challock, May 27, 1956, "I have never previously seen [it] so common" (Scott, *Trans. Folkestone nat. Hist. Soc.*, 1956: 5).

p. 93—

Woolwich Wood (div. 8), three, May 25, 1896, two, May 26, 1898, one, June 7, 1899, several, May 24-June 17, 1900 (H. D. Stockwell, *Diary*).

T. betulæ L.

p. 94—

Bethersden (div. 11), larvae beaten from sloe annually (W. V. D. Bolt, *in litt.*, 21.vi.1960). Woodchurch (div. 14), ova, including one cluster of seven, November 22, 1948; a dozen small larvae, June 6, 1951 (Bull, *Diary*).

T. quercus L.

p. 95—

At meeting on October 2, 1854, Stevens (*Proc. ent. Soc. Lond.*, 1854: 26) exhibited an "hermaphrodite", taken near Rochester.

C. rubi L.

p. 98—

Greenwich Park (div. 1) (1902, Webster, *Greenwich Park: Its History and Associations*). Bromley (div. 1), 1949 (D. Lanktree). Hayes Common (div. 1), one, May 18, 1951 (C.-H.). Ham Street (div. 12), 1958, 1959 (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1958: 72; *op. cit.*, 1959: 76). High Halstow (div. 6a), larva, 1958 (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1958: 75).

L. dispar Haw.

p. 99—

In Dale, *Lep. Register* (Dale MS. S.64), there appears the following entry under "*P. Hippothoe*: var *Dispar*":—"P. *Hippothoe*: J. Latham. Feversham Before 1800".

Under "*Chrysophanus hippothoe*, L.", Walker (*Ent. mon. Mag.*, 43: 131) refers to a ♂ in Dale coll. labelled: "'Mus. Haworth, Faversham, Kent'." This specimen, however, is certainly not *C. hippothoe* L. (= *chryseis* Borkh.), nor is it a ♂; and E. Taylor (Hope Dept. of Entomology, University Mus., Oxford) confirms (*in litt.*) that it is in fact a ♀ *L. dispar* L., and referable in his opinion to ssp. *rutilus* Wern.

L. phlaeas L.

p. 100—

High Halstow Marshes (div. 2), September 6, 1959, "especially common all over the marshes, even on saltings where it visited the flowers of Fleabane and Sea Aster" (J. F. Burton, *in litt.*). Bromley (div. 1), a larva on Broad-leaved Dock (*Rumex obtusifolius*), November 16, 1959 (D. R. M. Long).

P. argus L.

p. 103:

line 11 from bottom—after "Badgers Mount," add: June 20, 1948, "perhaps between 200 and 300 seen flying . . . nearly all ♂♂ and in fresh condition" (D. Lanktree, *in litt.*).

p. 105—

Reinden Wood (div. 8), a single ♂ seen in 1961 by T. Fawthrop (A. M. Morley).

p. 106:

line 19 from bottom—add: Cockayne (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1926-27: 27) states that "in a Kent locality, intersexes are scarce", according to R. H. Rattray.

P. icarus Rott.

p. 109—

Westwell (div. 7), ova and a larva found on Kidney-vetch
(*Anthyllis vulneraria*) (E. Scott).

p. 110:

line 8 from top—for “*corridon*” read: *coridon*

L. coridon Poda

p. 114:

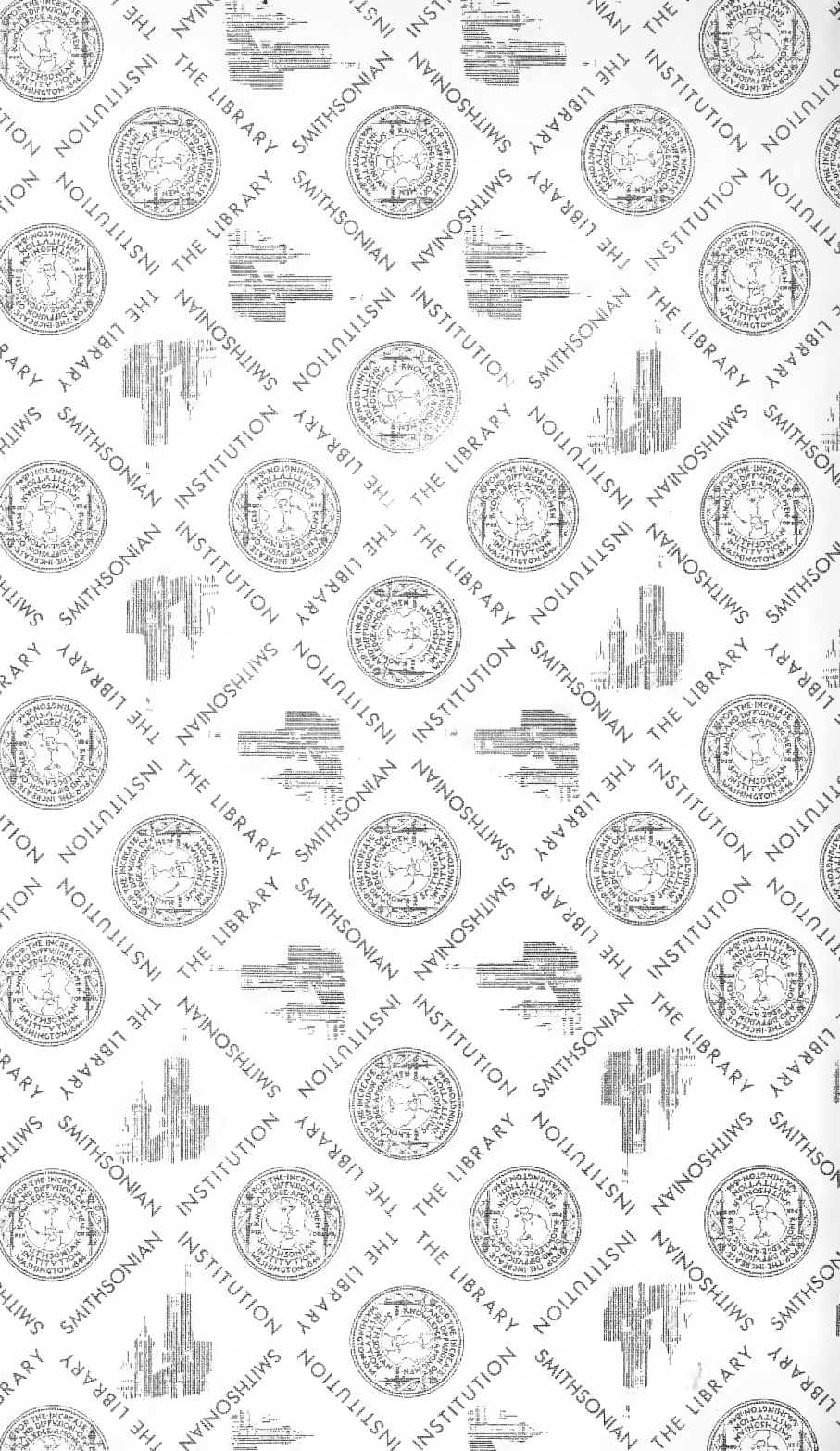
line 3 from bottom—for “peculiar” read: unique

I. bellargus Rott.

p. 120:

lines 17-18 from top—delete “(S. G. Hills)”







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v. 1 The butterflies and moths of Kent